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Extensive Reading for Academic Success

Advanced C

Moraig Macgillivray
Patrick Yancey

Extensive Reading for Academic Success

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Extensive Reading for Academic Success: Advanced C

Moraig Macgillivray · Patrick Yancey

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Table of Contents

SECTION 1 Modernization 7

Part A | Modern History

unit 1 Towards the City 8
unit 2 Deforestation and Land Clearing 10
unit 3 Benefits of Urbanization 12
unit 4 Factories: Mass Production 14
unit 5 Changes in Agriculture and Food Production 16
unit 6 Keeping Cities Safe 18

Part B | Urbanization & Industrialization

unit 7 The History of Urbanization 20
unit 8 Industrialization 22
unit 9 Public Transportation 24
unit 10 Animal Rights 26
unit 11 Social Security Systems 28

SECTION 2 Sociology 31

Part A | Society and Culture

unit 12 Newspapers 32
unit 13 Television Addiction 34
unit 14 Culture and Technology 36
unit 15 Fast Food 38

Part B | Social Behavior

unit 16 Self-Help Books and Support Groups 40
unit 17 Feminism and Women's Rights 42
unit 18 Substance Abuse and Rehabilitation 44
unit 19 Multicultural Society 46

Part C | Family

unit 20 Nuclear, Extended, and Non-traditional Families 48
unit 21 Divorce and Remarriage 50
unit 22 Adoption 52

Part D | Demography

unit 23 Neighborhoods 54
unit 24 World Population Trends 56
unit 25 New Urbanism 58

Part E | Child Development

unit 26 Pre-natal Development, Birth, and Infancy ······ 60
unit 27 Childhood ······ 62
unit 28 Puberty ······ 64

Part F | Education

unit 29 Kindergarten ······ 66
unit 30 Primary School ······ 68
unit 31 Educating Teens ······ 70
unit 32 College and University ······ 72

SECTION 3 Physics 75

Part A | Energy and Forces

unit 33 Gravity ······ 76
unit 34 Planetary Orbits ······ 78
unit 35 Newton's Laws of Motion ······ 80
unit 36 Thermodynamics ······ 82

Part B | Electricity and Magnetism

unit 37 Benjamin Franklin ······ 84
unit 38 Electrical Generation ······ 86
unit 39 The Principles of Magnetism ······ 88
unit 40 The Compass ······ 90

Part C | Light and Optics

unit 41 Light and Color ······ 92
unit 42 Particle or Wave? ······ 94

Part D | Particle Physics

unit 43 Splitting the Atom ······ 96
unit 44 Nuclear Energy ······ 98

Part E | Astronomy

unit 45 The Solar System ······ 100
unit 46 Comets and Meteors ······ 102
unit 47 The Constellations ······ 104
unit 48 The Hubble Telescope ······ 106

SECTION 4 Business 109

Part A | Business Icons

unit 49 Donald Trump ······ 110
unit 50 Estée Lauder ······ 112
unit 51 Richard Branson ······ 114
unit 52 Oprah Winfrey ······ 116

Part B | Management

unit 53 Leadership and Management ········ 118
unit 54 Corporate Ethics ········ 120
unit 55 Mergers and Monopoly ········ 122
unit 56 Business Partnerships ········ 124

Part C | Business Communication

unit 57 Office Communication ········ 126
unit 58 Presentations, Seminars, and Conferences ········ 128
unit 59 Successful Communication in the Business World ········ 130
unit 60 Human Resources ········ 132

Part D | Advertising and Finance

unit 61 The World of Advertising ········ 134
unit 62 The Stock Market ········ 136
unit 63 *The Wall Street Journal* ········ 138
unit 64 Currency and Banking ········ 140

SECTION 5 Art and Music 143

Part A | Techniques

unit 65 Body Art of the Maori ········ 144
unit 66 Pigment, Dyes, and Paint ········ 146
unit 67 The Art of Weaving ········ 148
unit 68 Beautiful Batik ········ 150

Part B | Art History

unit 69 Expressionism ········ 152
unit 70 Sculpture ········ 154
unit 71 Mosaics ········ 156
unit 72 The Development of Portraits ········ 158

Part C | Music and Music History

unit 73 Famous Composers ········ 160
unit 74 The Piano and the Violin ········ 162
unit 75 The Orchestra ········ 164
unit 76 Jazz ········ 166

Part D | Theater Arts

unit 77 On the Stage ········ 168
unit 78 Isadora Duncan ········ 170

Part E | Photography

unit 79 The Story of the Camera ········ 172
unit 80 Cinematography ········ 174

SECTION 1

Modernization

PART A | Modern History

unit 1 Towards the City
unit 2 Deforestation and Land Clearing
unit 3 Benefits of Urbanization
unit 4 Factories: Mass Production
unit 5 Changes in Agriculture and Food Production
unit 6 Keeping Cities Safe

UNIT 01 Towards the City

Rural-urban migration has long been a trend in human history as country dwellers flock to the city to take advantage of the economic opportunities available there. Farmers traditionally have large families but only one offspring can take over the family farm. As such, the other children must carve their own paths when they become adults. Generally, they go to the city to start their careers. However, the reality of the move from country to city is seldom as profitable as hoped. Rural-urban migration was a trend that characterized the Industrial Revolution in the developed world and is occurring today at a rapid pace in the developing world. The movement of people from rural areas to urban areas has become more pronounced in the past century, and cities are often unable to cope with the influx. As a result, urban poverty is fast becoming a significant problem, surpassing rural poverty as a chief concern.

Despite the trend for rural people to migrate to the city, it was not until 2007 that the world population of city dwellers came to outnumber that of country dwellers. Today more than 50 percent of the world's population lives in urban areas, and the trend is expected to increase. By 2030, more than two thirds of the world is expected to live in cities. Most of this growth is expected to occur in developing countries because rural areas are more poverty stricken there than they are in developed countries. However, there are certainly no guarantees of finding wealth or even an adequate livelihood in the city. Rather than seeing improvements in socio-economic status accompanying their movement from country to city, many find it difficult to find jobs that pay adequately. They, therefore, continue to live in poverty, albeit in a different environment.

When more people migrate to the city than the city can accommodate with jobs and resources, the result is overcrowding. Poor people arriving in the city search for inexpensive housing, which is found in the slums, typically in the inner city. Inner-city slums are characterized by dilapidated buildings placed in close proximity to one another and filled with more than the optimal number of people. This overcrowding creates unsanitary conditions as sewers are not equipped to accommodate so many people, and waste disposal programs are overloaded. It also creates a hospitable environment for germs, allowing communicable diseases to spread easily. As such, the health of slum dwellers is at risk, and health services in many cities around the world are operating in crisis modes. They do not have the resources to treat people, and those people simply do not have the funds to pay for health care.

Furthermore, such deplorable living conditions lead to high crime rates as people find it impossible to find honest work. This can lead to desperate action as they try to feed themselves and their families. The psychological impact of living in destitution can lead to drug abuse, which might be a crime in and of itself, and it can also lead to other criminal activity. Finally, proximity to other criminals can increase a person's likelihood of engaging in crime through education and opportunity. Criminals teach others how to break the law without getting caught and foster negative ideas. Living in inner-city slums not only makes people more likely to engage in crime, it also makes them more likely to be a victim of crime.

Clearly, many cities of the world have reached or are heading towards a crisis situation. One way to halt the growth of population in cities is to treat rural poverty. However, rural-urban migration is not the only cause of population growth in cities. High fertility rates also contribute to the problem. It has been shown that poor people tend to have more children than wealthy people, and since being born into a poor family generally prescribes a future of poverty for a baby, poor populations will continue to grow at a much higher rate than wealthy populations. As such, increased access to contraception would go a long way towards alleviating poverty both in cities and in rural areas.

1. Why does the writer introduce the claim that the reality of the move from country to city is seldom as profitable as one hopes in paragraph 1?

(A) To introduce the idea that the situation is sub-optimal
(B) To suggest that rural dwellers should stay in the country
(C) To imply that people should receive training before going to the city
(D) To accuse city governments of not doing enough to create jobs

2. According to the passage, which of the following was not mentioned as a characteristic of slums?

(A) Overcrowded
(B) Unsanitary
(C) Dangerous
(D) Unfriendly

3. What can be inferred about slums in paragraph 4?

(A) They are expanding.
(B) Crime rates are falling.
(C) Life expectancy is lower.
(D) They are over policed.

4. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) Poor people are more likely to have children, and those children are more likely to be poor when they grow up.
(B) High fertility rates and fewer opportunities lead to greater population growth among the poor.
(C) It's been proven that the more children a person has, the less likely those children are to succeed.
(D) It's been demonstrated that when poor people have more children than wealthy people, their prospects diminish.

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

There has been a historical trend for rural dwellers to migrate to the city in search of employment opportunities.

(A) Now, for the first time in history more people live in the country than the city.
(B) Today most rural-urban migration occurs in developing countries.
(C) It can be difficult for many to find work because they are unskilled.
(D) Lack of jobs and resources leads to overcrowding and the development of slums.
(E) Poverty-stricken slums facilitate the spread of disease as well as criminal activity.
(F) People living in poverty should not have children.

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UNIT 02 Deforestation and Land Clearing

Humans are unique creatures in that they have the ability to manipulate their environment to suit their needs, whereas most animals must adapt to the environment they find themselves in. Additionally, ever since humans developed this ability, they have been converting forested areas into non-forested areas; essentially engaging in deforestation. When humans learned to create and control fire, it completely changed their relationship with the land. Fire was a tool that could be utilized to alter the landscape, which provided humans a competitive advantage over the other animals. For example, by setting parts of the forest on fire, they could drive wild game to certain areas where they could be easily killed.

The next major event contributing to the deforestation was the development of agriculture, which meant that large quantities of land needed to be cleared of trees and other vegetation in order to create fields to plant crops. That resulted in a great deal of deforestation in and of itself, but the implications of farming were more far-reaching than that. Namely, the advent of agriculture resulted in an immense population explosion. Mass production of food meant that more people could be fed, and it meant that people could sacrifice their nomadic lifestyles and settle in one place. As such, large quantities of houses were being built, and those houses were typically built from wood. Further, food needed to be transported from the farm to a central market where people could purchase it, and that meant that a lot of wooden carts were built for transport. Depending on the regional climates, people may have needed wood to heat their homes. Farming also allowed for specialization of labor, so there were people completely devoted to providing a variety of goods to consumers, and many of these produced goods were developed from wood. In effect, population growth created an increase in demand for lumber, which, simply stated, results in deforestation.

Population has continued to grow exponentially since the development of agriculture, and this growth has put incredible strains on the Earth's natural resources, including its forests. There are a multitude of human activities that cause deforestation either directly or indirectly. Commercial logging operations initially chop trees in order to gain access to the area intended for logging, and then the area is completely stripped of its trees. In addition to the demand for houses, furniture, and many other goods that are made out of wood, approximately half of the world's population depends on wood as a fuel source. Often forests are cut down not for the use of the lumber but simply to make room for urban sprawl. For example, it is predicted that in the next 40 years as the southern states of the U.S. become more urbanized, they will lose more than 31 million acres of forest. Another factor is the increased demand for beef that has resulted from the growing popularity of fast food. The cattle used to make that beef need somewhere to graze. Finally, wildfires, often caused by human activity, are incredibly destructive.

Human populations put such an incredible strain on our forests that it is predicted that if deforestation continues at its current rate, there will be no rainforests left by the end of this century. Rainforests are particularly valuable because they are home to countless species of plants and animals, many of which have not yet been identified. There is a wealth of knowledge that can be gained, but it is speculated that many species are going extinct before scientists even have a chance to study them. Furthermore, trees and other plant life act as filters to rid the air of pollutants. Another problem with human activity is that it puts a lot of pollution in the air. Therefore, while people continue to pollute the atmosphere, they are killing the only resource they have to clean it. Forests also play an important role in the water cycle, and they prevent soil erosion. Clearly, if the Earth's forests are lost there will be disastrous consequences, and reforestation efforts must increase while frivolous demand for lumber decreases.

1. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) Humans can utilize animals to help them survive in different types of environments.
(B) Humans differ from animals in that they can alter their surroundings to meet their needs.
(C) Humans are essentially animals with the ability to adapt to a wide variety of environments.
(D) Humans have needs that are different from animals, so they have to be better able to adapt.

2. Why does the writer mention the invention of fire in paragraph 1?

(A) To show how many of the world's forests have been lost to wildfires
(B) To explain why humans have always outwitted the animals
(C) To introduce the topic of deforestation by stating the first instance of it
(D) To introduce the topic of deforestation by showing how destructive humans are

3. According to paragraph 3, which of the following is not mentioned as a benefit of forests?

(A) They are home to different kinds of plants and animals.
(B) They are home to cattle which provide beef.
(C) They filter the air of pollutants.
(D) They prevent soil erosion.

4. What can be inferred from paragraph 3 about the fast food chains?

(A) They clear forest areas to make fields for their cattle.
(B) They sell low quality beef at lower prices to compete.
(C) They are trying to sell more poultry because it's cheaper to raise.
(D) They are the main party responsible for deforestation.

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

Humans have been engaging in deforestation since they invented fire.

(A) As the population has grown, the demand for lumber has increased.
(B) The development of fire created a huge boom in the population.
(C) A population growth led to specialization of labor.
(D) Forests are often cleared to make room for new human populations.
(E) Reforestation cannot keep up with population growth.
(F) Population growth is problematic because forests are needed to keep the air clean, promote bio-diversity, and prevent soil erosion.

UNIT 03 Benefits of Urbanization

1 Many choices faced in life are motivated by economic concerns, and chief among these concerns is what job opportunity to seek or what kind of career to pursue. This decision will probably have an immense impact on another of life's major decisions: where to settle. Because most economic and employment opportunities are in urban areas, a majority of people choose to live and work in the city. Many are born and raised in the city, and they remain there as adults. Many others are reared in rural areas but transfer to the city either because there are few job opportunities in their area or because they prefer city life. The movement of people from rural areas to cities is called urbanization.

2 Cities consist of large quantities of inhabitants living in close quarters and entering into economic activity together. People who transfer from the country into the city contribute to the wealth of the city in two specific ways: they contribute with their labor and by spending the money earned for their labor output. So, if a man moves from his rural childhood home and begins work in a large factory, he becomes a valuable resource in the production of whatever good is being produced. Then, when he receives his paycheck, he pays rent for his apartment, he purchases groceries, he visits the movie theatre, and he may even contribute by buying the product he helped produce. Therefore, he is funneling his money back into the active economy of the city. Increases in population create wealth so long as employment opportunities are readily available. Cities are extremely attractive to people originating in rural areas because urban life provides a multitude of opportunities to earn and spend money.

3 One implication of increases in population in the city is that small-scale businesses tend to be replaced by large companies. This is far more efficient because it creates economies of scale, which means that there is incentive to increase production because the cost per unit decreases as more is produced. Therefore, large-scale production is more efficient than small-scale production. Further, cities in general are more efficient than rural communities simply because everything is so close together. The close proximity of all of the residents makes life in the city more efficient because it requires less energy to provide people with the services they need, such as water, heat, and waste disposal.

4 In addition to the demand for various goods created by the influx of people into the city, the demand for services increases, too. Large clusters of people provide patients for doctors, clients for lawyers, and students for teachers. Those are only a few of the enormous number of services available in cities. The increase in population also creates a demand for less common services. For example, a feng shui consultant might have a difficult time finding a large enough clientele to support the business in a rural community but can attract many people in the city who are interested in organizing their space in such a way as to achieve harmony. Thus, a diverse array of services appears in cities as more and more people come to live in them.

5 The variety of goods and services available in urban areas make city life much more convenient than country living. Basically, city dwellers can purchase whatever they want, whenever they want, provided they have the money. Shops in rural areas do not tend to offer much variety and, further, they do not remain open as many hours. Moreover, people who live in the city are often walking distance from most of the things they want and need. However, if they want to stray further from their homes, there are usually mass transit networks, which are an efficient way to transport large numbers of people.

6 A final benefit to urbanization is that there are a lot of resources in a small area that can be put to use to create cultural, political, and social activities and events. These institutions improve the desirability of city living for many. Of course, urbanization does have its drawbacks as well. However, effective city planning seeks to optimize all of the advantages of urbanization while minimizing the disadvantages. Cities can be, and often are, centers of wealth and human resources that can be tapped into by those who choose to benefit.

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หากพวกเขาเลือกที่จะทำเช่นนั้น

1. What can be inferred from paragraph 1?

(A) People would rather stay in the country.
(B) The population of cities is growing.
(C) Farms are suffering because of urbanization.
(D) City living is better than country living.

2. According to paragraph 1, which of the following considerations is most important in deciding where to live?

(A) Efficiency
(B) Convenience
(C) Economic opportunity
(D) Social dynamics

3. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) Cities are more cost-effective because it's easier to distribute services to people living close together.
(B) Cities are more economical because there is an increased demand for basic services like waste disposal.
(C) Cities are less wasteful because people demand fewer services that put strains on the environment.
(D) People do not waste as much time trying to acquire basic services when they live in the city.

4. Why does the author mention feng shui in paragraph 4?

(A) To demonstrate that city people are more creative than country people
(B) To show how city planning can be used to achieve inner harmony
(C) To give an example of an industry that prospers in the city but not in the country
(D) To imply that it is more fulfilling to live in the city than it is to live in the country

5. Complete the table below to summarize the information about the urban and rural lifestyles discussed in the passage. Match the appropriate statements to the one with which they are associated. Two of the statements will NOT be used.

Lifestyles	Statements
Urban	**Select 3** • • •
Rural	**Select 2** • •

(A) Few economic opportunities
(B) More sustainable development
(C) Efficiently run
(D) Convenient lifestyle
(E) Limited goods and services
(F) Higher real estate costs
(G) Many cultural events

UNIT 04 Factories: Mass Production

1 In the era preceding the Industrial Revolution, a majority of goods were produced by well-skilled artisans. No two handicrafts were exactly alike, and it took an immense amount of time to produce a single item because the craftsman was in charge of all aspects of production from the design to the finished product. Would-be craftsmen were required to train for years as apprentices, learning their trade from a master craftsman. In time, though, a more efficient method of manufacturing goods became commonplace, that is, factory work. Originally called a manufactory, factories essentially were warehouses of mass production, allowing for higher productivity and requiring almost no skill from the workers. The adoption of the factory system was the initial stage of the Industrial Revolution.

2 The textile industry provides a useful demonstration. Several inventions in the eighteenth century revolutionized the way fabrics were woven. Previously, the textile industry was considered a cottage industry because the wool was processed in people's homes. Primitive equipment such as the spinning wheel and the loom were used; both powered by the hands and feet of the people operating the machinery. As such, cleaning, dying, spinning, and weaving wool was laborious work until innovative machinery came along that created easier, more efficient, and faster methods. The incentive to invent such machinery came from an increase in demand for fabrics. When a machine was invented that was too big to fit into a family home, cottage industries were replaced by the factory system.

3 The principle underlying the factory system was the task of manufacturing a good could be broken into a series of smaller tasks for a larger number of workers to perform. So, instead of producing a good from start to finish, one task at a time, a given worker would be assigned one task which would be repeated repetitiously to help complete several copies of the same good. For example, manufacturing a table might be divided into twelve tasks that would require one person one entire day to complete. However, by using 12 people to complete each of the 12 different tasks, those same people could create 12 tables in one day. If you add machines to the equation, those 12 people might be able to manufacture 50 tables in one day. Factories, therefore, are large spaces with a multitude of machines designed to make production more efficient and where a large number of workers can assemble to aid in goods production.

4 The factory system characterized the Industrial Revolution and profoundly impacted society. Employees in the cottage industries could no longer compete with the factories and were forced to sacrifice their home businesses and begin work in the factories. Factory owners built houses near the factories so that employees could be nearby, but in true capitalist fashion, they kept costs low and thus, the slums were born. Working conditions in the factory were deplorable; even children were forced into unsafe conditions and paid an extremely low wage. All workers, in fact, were paid a measly wage that was barely enough for survival. In time, the development of workers unions would improve workers rights and, therefore, improve working conditions.

5 In the early twentieth century, the factory system considerably changed for the better. Mass production was further revolutionized when Henry Ford improved the assembly line by adding a conveyer belt. Ford was an automobile manufacturer in the early twentieth century, which was a unique time when only the extremely wealthy could afford to purchase a car. Henry Ford altered that by developing a moving assembly line which dramatically increased the speed at which a car could be produced, making it possible to manufacture a large quantity of cars cheaply. He thereby reduced the cost significantly. Ford's Model T took only 93 minutes to assemble and cost a mere 800 dollars to purchase the first year upon release. Other cars that were hand crafted cost two or three thousand dollars at that time. Ford also had the insight to create demand for his own product by paying high wages to the workers who produced it so that they would be able to buy cars, too. Affordable cars significantly changed the landscape of the United States. With increased wages and cars to travel, people did not have to live in slums nearby the factories.

1. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) Production was time consuming because each finished product had to be different from the others.
(B) Because the craftsmen completed the product from start to finish, production was time consuming and no two items were identical.
(C) Each item was handcrafted to make sure that it would be unique and this took a long time because only one person was in charge.
(D) Making items by hand was an inefficient way to manufacture goods that were in demand.

2. Why does the writer mention the textile industry in paragraph 2?

(A) To give an example of an industry that was changed by the Industrial Revolution
(B) To demonstrate the problems inherent in family-run businesses
(C) To show how industry can improve the quality of a product
(D) To suggest that the Industrial Revolution led to important innovations

3. According to paragraph 3, how were factories able to increase production?

(A) They had more workers do menial tasks repeatedly.
(B) They hired fewer but more skilled workers.
(C) They replaced workers with machines.
(D) They used less costly materials.

4. What can be inferred from paragraph 5 about Henry Ford?

(A) He cared about the well being of his workers.
(B) He designed the most durable car of his day.
(C) He was a brilliant businessman.
(D) He appreciated hand craftsmanship.

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

The factory system rendered hand craftsmanship and cottage industries obsolete.

(A) Since machines have replaced people, products have not been as durable.
(B) The invention of certain machines and the efficiency of the factory increased productivity.
(C) The factory created slums and diminished the quality of life for many people.
(D) Through the formation of unions and the enactment of strikes, workers gained more rights.
(E) Henry Ford's idea for unionized workers improved working conditions for everyone.
(F) Henry Ford revolutionized mass production with the introduction of a moving assembly line.

UNIT 05

Changes in Agriculture and Food Production

1 The food industry has changed tremendously since the days when farmers brought their harvest to market for consumers to purchase directly. Farms have become amazingly larger and more specialized, and people have moved into cities that are located great distances from the farms. City dwellers shop at supermarkets rather than small marketplaces, and they have developed a taste for an immense variety of foods that may not be suitable for growth in the area being inhabited. City dwellers are often too busy to spend a lot of time cooking the family meal, so they much prefer foods that are fast and convenient. To coincide with these changes in the food industry, city inhabitants have developed techniques to preserve food for longer periods of time and to be convenient, safe, and more flavorful.

2 The advent of food processing truly revolutionized the food industry, but processing foods is accompanied by drawbacks. While food processing aids in making food safer, for example, by removing toxins or by preserving it, it can also diminish the nutritional value of some foods. In general, a vegetable picked from a garden in the backyard will have more nutrients in it than one purchased at the supermarket. However, the garden vegetables will not last quite as long and can only be grown during a certain season. Preservatives allow people to ship food products a long distance so people can enjoy any type of produce desired at any time of year in virtually any climate on Earth. However, those preservatives may cause short-term or even long-term illnesses in some people.

3 Farmers have been selectively breeding and crossbreeding plants and animals to bring out their optimal traits for a very long time. However, when scientists began to understand DNA and genetics, a new possibility emerged. Scientists can now combine genes from two completely different organisms. They can identify a gene that produces a certain trait in one organism and insert that very gene into another organism. This is a far more accurate method of eliminating undesirable traits and maximizing desirable traits than selective breeding or crossbreeding. It also introduces completely new traits to an organism that the original organism would not be able to obtain through simple crossbreeding. Scientists can also simply switch on or switch off any given gene. If a certain gene is undesirable, it is switched off. Genetic modification can be used to create resistance to pesticides, immunity to viruses, and even improve nutritional value. It does, however, have its risks. People rightfully worry that the practice undermines genetic diversification, which can pose harmful effects on the ecosystem.

4 The industrialization of agriculture has resulted in the development of a multitude of techniques to help increase farmers' yields immensely. Chemical compounds fertilize soil and protect crops from insects and other such pests. These fertilizers and pesticides are inexpensive and effective. However, they can be quite harmful to the environment, and they may not be healthy for humans to ingest. Runoff from farms enters the water supply, causing fish and other marine life to fall ill and disrupting the ecosystem. Humans have been known to develop serious problems from handling or eating foods that have been treated with these chemicals. For example, pesticide use has been linked to birth defects in babies born to farm laborers.

5 Food processing, genetic engineering, and the use of chemicals in agriculture all have their advantages and their disadvantages. For those who are wary of processed foods, genetically modified foods, or foods that have been sprayed with chemicals, the answer is organic foods. Organic farmers take a holistic approach to farming, which focuses on preserving the land and its resources. They promote a healthy ecosystem by limiting the use of chemicals and by using techniques that minimize the depletion of nutrients in the soil. For example, crop rotation gives land the opportunity to recover after yielding a crop. By using parts of the land for crops and allowing other parts to lay dormant, they ensure that their land will continue to yield crops for years to come. Their focus on biodiversity ensures that they will not use dangerous chemicals or genetically modified foods. People can also purchase processed foods that contain organic ingredients and be assured that they have been processed without the use of additives.

1. What can be inferred from paragraph 1 about rural and city living?

(A) People are no longer able to make a living on farms.
(B) Populations in rural areas are decreasing.
(C) City dwellers and country dwellers eat different foods.
(D) The rise of convenience foods is destroying farms.

2. According to paragraph 2, which of the following is true of vegetables grown in a home garden?

(A) They are healthier than store-bought vegetables.
(B) They last longer than store-bought vegetables.
(C) They are more toxic than store-bought vegetables.
(D) They must be eaten on the day they are picked.

3. Why does the writer claim that runoff from farms gets into the water supply, causing fish and other marine life to fall ill and disrupting the ecosystem?

(A) To demonstrate the disastrous impact of genetically modified foods
(B) To support the idea that organic farmers must be stopped
(C) To illustrate how an ecosystem functions
(D) To give an example of a negative impact of modern agricultural techniques

4. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) People with weak immune systems should always choose organic foods.
(B) People who mistrust modern techniques in agriculture can choose organic foods.
(C) People who oppose the use of chemicals on crops can grow their own organic foods.
(D) People who are concerned about the environment can purchase organic foods.

5. Complete the table below to summarize the information about the types of food production discussed in the passage. Match the appropriate statements to the one with which they are associated. Two of the statements will NOT be used.

Production Types	Statements
Modern	**Select 3** • • •
Organic	**Select 2** • •

(A) Utilizes crop rotation to protect soil nutrients
(B) Sprays crops with chemical to protect them from pests
(C) Uses machinery to decrease necessity of human labor
(D) Threatens biodiversity
(E) Yields larger crops
(F) Uses a lot of food additives
(G) Takes a holistic approach to farming

UNIT 06

Keeping Cities Safe

Safety has always been a major concern for humans. Prior to the rise of the first city-states, humans lived with constant raids and wars, and it was the responsibility of every male in the tribe to protect and defend the lives and resources of the group. Eventually, the rise of large chiefdoms with layers of social hierarchies would create a separate warrior class. This standing military was the only form of security throughout much of antiquity, with fear of the power of the despot or reprisal of the victim being the only preventative measures against crimes.

As cities grew, people began demanding better protection and the need arose for organization and specification of duties. The city of Rome breached one million inhabitants under the reign of Augustus Caesar. To ensure public safety, he divided Rome into 14 districts and designated seven groups of one thousand men each to ensure order and safety. In emergency situations, these groups could call on the Emperor's personal guard for assistance.

After the fall of Rome, Europe organized itself into a feudal system of peasant farmers and elite land owners. During this period, it was the responsibility of each lord to ensure the safety of his lands. For this purpose, each lord kept a standing group of soldiers to deter and defend against outside invaders. Addressing internal crimes was a secondary function of the lord's administration and soldiers. Lords sometimes appointed a constable to be in charge of internal disputes, a position that was not remunerated.

The size of European cities began to swell around the time of the Renaissance. At this time, the need for better protection of person and property became acute. By the middle of the seventeenth century, Paris was home to nearly half a million people and had become notoriously crime-ridden. In response, King Louis XIV created the first modern police force by royal decree on March 15 of 1677. The head of this new force was the Lieutenant Général de Police, and its official mission statement included ensuring peace, quiet, and order, as well as making sure each person lived according to their social position and duties. Paris was divided into 16 districts, and 44 Commissaires de Police were appointed under the Lieutenant Général. This system was extended to the rest of France in 1699. The Inspecteurs de Police were added in 1709.

The English-speaking world, however, viewed this system with suspicion and refrained from implementing anything similar for approximately a hundred years. Although the city of London had been hiring people called watchmen to guard the streets at night since 1663, the first official English police force was the Marine Police, created in 1798 to guard shipping cargo in London's port. The first preventative city police force in Britain was formed in Glasgow, Scotland, in 1800, at the behest of the citizenry. Other Scottish cities and towns soon followed suit. In 1829, the British Home Secretary, Robert "Bobby" Peel, created the London metropolitan police force, nicknamed Bobbies.

This force quickly became the model for the rest of the English-speaking world. North American police forces soon began in most major cities. The first was in British North America (Canada) in Toronto in 1834, then Montreal and Quebec City in 1838. The first U.S. city, Boston, started its police force in 1838 as well, followed by New York City in 1844 and Philadelphia in 1854. As law and order became less of an issue in the United States, the military's focus shifted to foreign affairs. As a result, a national investigative police force was created to combat large-scale organized crime, track major fugitives, and handle criminal matters of national interest. Created in 1908 under Theodore Roosevelt, it still exists today and is known as the Federal Bureau of Investigation, or FBI.

Today's police forces have strict limits on their power. In the U.S, these include the right of a criminal to a lawyer and the right to remain silent. These rules came as a reaction to historical police practices including using brutality and torture to force confessions. In the future, improvements in non-lethal weapons and surveillance techniques are expected to further transform the practice of law enforcement.

1. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) Before criminality was sophisticated and organized, the city's military, coupled with propaganda, was adequate for keeping the populace orderly.
(B) Criminals were kept in check by tyrannical methods and countermeasures, and in many ancient societies, the King's soldiers often were the perpetrators.
(C) During much of the ancient years, only the army was responsible for public safety, relying solely on the King's authority or personal vengeance as deterrents.
(D) Before the renaissance, when weapons were crude and scarce, the royal armies inspired such terror that the general public typically did not dare commit crimes.

2. Why does the writer mention the Emperor's personal guard in paragraph 2?

(A) To highlight the intimate relation with the executive branch at this stage
(B) To illustrate the resources and organization of the first city security force
(C) To acquaint the reader with some relevant characteristics of Roman culture
(D) To refute claims that Augustus was selfish and had no concern for the people

3. According paragraph 6, what was the first official police force in the English-speaking world?

(A) The night watchmen in London
(B) The Marine Police at London's port
(C) The Glasgow city police in Scotland
(D) The London Metropolitan Bobbies

4. What can be inferred from paragraph 6?

(A) Retired soldiers often joined early police forces for extra income.
(B) Boston had the worst crime rate of any American city at that time.
(C) The FBI originally protected the political interests of the president.
(D) The military had previously been active in the interior of the U.S.

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

The earliest forms of security enforcement were the secondary duties of the military.

(A) Augustus Caesar divided Rome into 14 districts and divided these among primitive police squads.
(B) Though Rome started a kind of police force, the Middle Ages relied on the lord's soldiers and informal officers.
(C) France created the first modern police over a hundred years before London developed its new model force.
(D) Early North American police forces started in Toronto in modern-day Canada and later spread to New England.
(E) Theodore Roosevelt saw the need to create a national force to combat the rise of organized crime in the twentieth century.
(F) Before the FBI came into existence in 1908, U.S. police started in major cities but have more restrictive powers today.

UNIT 07

The History of Urbanization

1 The detailed history of urbanization began in Neolithic times. Once early humans devised techniques to cultivate and store food, they were easily able to gather in one place to settle. Mass production of food meant that larger numbers of people could be supported, and it allowed for specialization of labor because people were not burdened with hunting game and gathering food everyday. A small group of people could be in charge of providing food for a large group; this freed many other members of the group to perform much-needed, different duties. While some people focused on agriculture and feeding the tribe, others were able to devote time and energy to other tasks. One group of people, for example, might specialize in the production of clothing, while another might manage the construction of housing. All individuals could develop and utilize their own talents to provide a good or service to the rest of the community through a system of exchange, such as bartering, or using a monetary system. In order to facilitate beneficial trade, a market needed to be established, and people had to be relocated to live in close proximity to engage in exchange. Thus, the hunter-gatherer lifestyle was abandoned in favor of this new village life.

2 The early villages were characterized by a harmonious relationship between people and nature. People still relied heavily on the land, and villages could not grow so big as to overtake fertile land. As such, if numbers became too great, a new village would be established nearby utilizing other farmland. Advances in farming technology, however, allowed smaller portions of land to cultivate more abundant crops. Further, improvements in transportation allowed foodstuffs to be shipped long distances and so villages did not have to be located close to farmland. These advances, coupled with population growth, created the impetus to expand villages into towns and cities and to expand cities into larger metropolitan areas in order to house more people. Transportation also allowed people to travel from place to place, which facilitated trade. As such, a merchant class emerged, and trading between cities thrived. Individual wealth increased for many, and tastes became more extravagant as people had access to treasures from distant lands. These privileges, of course, were reserved for the upper class, which was a distinction that was not so defined in village life. Thus, a class-based society emerged within cities with wealthy people becoming increasingly greedy and poor people living hand-to-mouth and working very hard.

3 The establishment of cities also involved a distancing of man from nature. Nomadic peoples avoided devoting energy and resources to establishing things of permanence. Even in the early days of settlement, huts were not made of materials that would last. But cities were undoubtedly an artificial environment built to resist fire and inclement weather, and to endure a very long time. Walls were created around cities to keep invaders out, and irrigation and sewer systems were established to control nature. Humans, therefore, asserted their dominance over nature when they established cities. Of course, in order to develop these systems, there had to be a system of government to allocate funds and make decisions. A building was generally constructed for government affairs, and this building would be centrally located in the city.

4 Modern cities are not, however, as permanent as they were designed to be, and when the city grows to a point where its resources can no longer support its population, it is in danger. The disregard for nature that characterizes a city's growth can ultimately cause its ruin, as the ancient Romans might attest. Cities that have surpassed self-sufficiency do not, however, simply stop growing. Generally, they either grow by colonizing distant land or by continuing to spread into the countryside, making matters worse. Modern cities are past the point of sustenance and continue to expand outward. The Earth's precious resources are being wasted at incredible rates because of the mentality that seems to have developed along with cities—that of personal greed and callous disregard for nature.

1. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) Mass production allowed people to focus more on their work in order to provide food.
(B) Mass production of food led to increases in population because more people could be fed.
(C) Mass production of food led to worker specialization such as hunting and gathering.
(D) Mass production of food fed more people and gave them time to engage in specialized work.

2. According to paragraph 1, which of the following was not mentioned as a factor contributing to the development of cities?

(A) Mass production of clothing
(B) Specialization of labor
(C) Advances in farming technology
(D) Improvements in transportation

3. Why does the writer mention nomadic people in paragraph 3?

(A) To explain how agriculture was developed
(B) To show how city living is the best way to live
(C) To offer a healthy alternative to city life
(D) To contrast their way of living with city life

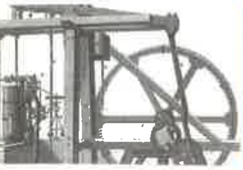
4. What can be inferred about the Roman Empire in paragraph 4?

(A) It was responsible for the state of the environment today.
(B) While the Empire fell, the city remained because of its symbiotic relationship with nature.
(C) It fell, in part, because of its disregard for nature.
(D) That it fell, in part, because of forces beyond its control.

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

The development of cities began with the development of agriculture.

(A) Mass production of food allowed people to stay in one place and do specialized work.
(B) The development of agriculture created a dichotomy between city and country.
(C) Cities are designed to adapt to changing times and circumstances.
(D) Cities are characterized by a permanence that is in stark contrast to nature.
(E) Over exploitation of nature can be disastrous for cities, though most continue to act in defiance of nature's limits.
(F) Rome is an example of a modern city that exists in harmony with nature.



UNIT 08 Industrialization

1 The term industrialization refers to a detailed process whereby a society is transformed by the advancement of industry through innovative inventions that improve production. These immense changes result in drastic changes in the ways people think and live. So expansive is this transformation of culture and lifestyle that most refer to it as a revolution. However, there are critics who question the utilization of the term, industrial revolution. They claim that because the process was extremely gradual, it cannot possibly be termed a revolution. However, the dictionary definition states that radical social change does not need to happen within a certain time frame in order for the term to apply. As such, the changes that occurred in British society in the eighteenth century and those of U.S. society in the nineteenth and twentieth centuries are referred to as the First Industrial Revolution and the Second Industrial Revolution respectively.

2 Both industrial revolutions were characterized by three major changes. First, machines replaced non-mechanized tools, which both propelled industry and created industry since machines had to be built in order to build more machines. Secondly, the demand for unskilled labor increased while skilled laborers lost their livelihoods. Craftsmen and artisans could no longer compete with the mass production of goods in factories. Mass production allowed manufacturers to sell items at severely lower costs and as a result, skilled workers were forced to do unskilled work but earned lower wages. Finally, human energy was replaced by other sources of energy, such as steam.

3 The invention, or more accurately, the perfection of the steam engine, by James Watt, initiated a complete reconstruction of the way people lived their lives in England. The steam engine powered industry effectively reduced the need for man power and water or wind-generated power. The new source of power ensured factory production was far more efficient and as such, factories eventually replaced cottage industries. This was particularly true of the textile industry. Housing was located near factories, and so the masses of people employed by the factories came to live in these areas, which meant population growth and the formation and expansion of cities. The class structure of England was also significantly altered. The aristocracy, whose merit was based on inheritance, became antiquated and an emerging middle class of self-made industrialists grew. Wealth was no longer held exclusively by the aristocrats, and their means of social control diminished. Those working in the factories, however, were not so fortunate. They worked long hours under harsh conditions and did not profit greatly from their efforts as wages were kept to a bare minimum. Thus, the society of England was changed greatly as people moved from country to city, and the social structure was overhauled.

4 The War of 1812, between the United States and Britain, indirectly spurred the Second Industrial Revolution in the U.S. It left the relatively young country resolute to gain economic independence from Britain. To do this, industry in the country had to expand. It also became clear during the war that transportation would have to improve in the vast country. This was the first step in preparing the U.S. for the rapid industrialization that would follow. The government, therefore, proceeded to build a detailed system of roads and lay miles of railroad tracks. Just as the Industrial Revolution began with the textile industry in Britain, the first major invention in the U.S. to incite its revolution involved textiles. Eli Whitney invented the cotton gin in 1793; his machine removed seeds from cotton, which greatly increased the speed at which cotton could be processed. This enlivened the textile industry but at a cost. Cotton was cultivated in the southern states where slavery was still practiced. The cotton was then shipped to the northern states where it could be processed in factories. As such, the textile industry in the north was industrialized, but the practice of slavery in the south was revitalized.

5 The United States had no monarchy in rule, and the government officials were in favor of the free market and took an extreme laissez-faire approach to governing. It was a society that fostered innovation as evidenced by such inventions as the telephone and the light bulb. Whereas industrial inventions spurred the Industrial Revolution, these household inventions drastically altered the way people lived.

1. Why does the writer mention the dictionary in paragraph 1?

(A) To dismiss an argument
(B) To support an argument
(C) To define a term
(D) To make a point explicit

2. According to paragraph 2, which of the following was not mentioned as an element of both Industrial Revolutions?

(A) Machines replaced other tools.
(B) Paid labor replaced slave labor.
(C) Unskilled work dominated.
(D) Use of non-human energy dominated.

3. What can be inferred from paragraph 3 about steam engines?

(A) They were invented by James Watt.
(B) They were soon in every home in England.
(C) Less successful versions had been invented previously.
(D) Previous inventors did not patent their designs.

4. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) Factories were built near housing developments to attract workers.
(B) Cities got bigger to accommodate all of the people commuting to work in factories.
(C) Housing provided by factories was inadequate for all of the people they employed.
(D) Factory employees moved to housing near factories, and this caused cities to grow.

5. Complete the table below to summarize the information about the revolutions discussed in the passage. Match the appropriate statements to the one with which they are associated. Two of the statements will NOT be used.

Revolutions	Statements
First Industrial Revolution	**Select 2** • •
Second Industrial Revolution	**Select 3** • • •

(A) Occurred in the United States
(B) Occurred in England
(C) Important early invention was the steam engine
(D) Important early invention was the cotton gin
(E) Slaves worked in factories
(F) Society encouraged innovation
(G) Aristocracy replaced monarchy

UNIT 09

Public Transportation

1 Public transportation, though often considered a modern innovation and conjuring up images of the New York City subway system, has actually existed for thousands of years in the general sense of the term. Ancient societies, for instance, used ferry boats that could be hired to provide passage across water. The Romans built thousands of miles of roads and many bridges to facilitate the general flow of persons and goods. Throughout much of history, the hiring of horse-drawn carts often served a function similar to the modern taxi cab. It was really just a matter of time before a combination of population, commerce, and technology made the idea of organized, regular public transportation obvious.

2 Conveniently, historians can pinpoint a time and place for this realization: Nantes, France, 1826. At that time, a retired army officer started a large horse-drawn transportation service to take citizens from town out to his baths in the country. Though it did not have its desired effect on his business, his conveyance did enjoy exceptional popularity from persons wishing to get on and off at intermediary points. The designation given to this vehicle was the *voiture omnibus*, a combination of French and Latin meaning 'vehicle for everyone.' As the apparatus became popular around Europe, spreading to Paris, Bordeaux, and London by 1832, its long name was shortened to "bus." Around this same time, cities in the United States, such as New York, Philadelphia, and Boston implemented similar systems by making special arrangements with local citizens in the transportation business.

3 The main problems with this new system, poor road quality, low speeds, and lack of comfort were addressed in 1832 with the advent of the rail system in Manhattan. Initially, it was still just a horse pulling a cart, but the rails allowed for a smoother ride and increased efficiency. This infrastructure was enhanced in 1852 with the development of a grooved rail line that was embedded at the level of the pavement. Previously, the rails protruded half a foot off the ground and impeded non-rail traffic. This new horsecar quickly conquered the omnibus by around 1860 in many U.S. cities. The horsecar peaked in 1890 with 415 companies and 188 million passengers a year.

4 The next step, of course, was to eliminate the horse. This came in 1867 with the invention of the cable car in New York. Although its initial test run was not a success, it was soon revived in San Francisco by wire rope businessman, Andrew Smith Hallidie. The cable car used a large steam engine to pull a thick cable which in turn pulled the cable car. The cable car continued to grow until its apex in 1890, with 373 million passengers in 23 cities.

5 The cable car was replaced with the electric streetcar, also called the tram or trolley. Early versions appeared in Baltimore in 1885; Montgomery, Alabama in 1886; and Richmond, Virginia in 1887. Frank Julian Sprague was the businessman largely responsible for spreading the trolley throughout the United States. They were widely in place by 1900 and were attaining speeds of 20 miles per hour. By 1903, 90 percent of streetcars in the United States were running on electricity.

6 With no horses, the next major problem was urban congestion itself. The two main proposals for resolving this were either putting the trains in the sky or under the ground. Though there were several experiments with the former, notably in New York and Chicago, they were ultimately deemed to be too noisy and obtrusive and today are confined to areas where subways are not feasible, such as Bangkok, which is on a swamp. The underground rail system, supplemented with motorized buses, is by far the most common and successful form of public transportation on the planet today. It first appeared in London in 1863, followed by Boston and New York around the turn of the twentieth century.

7 The rise of the automobile in the early twentieth century threatened public transportation with complete individual freedom of travel. The car largely destroyed American passenger train travel with the help of government policies heavily favoring the former. Recently, environmental and traffic concerns have precipitated a reassessment of the American car culture.

1. Why does the writer mention population, commerce, and technology in paragraph 1?
   - (A) To familiarize the reader with the major claims of public transportation proponents
   - (B) To highlight the fact that the first public transportation was not officially administered
   - (C) To introduce the three themes comprising the general structure of the passage
   - (D) To argue that public transportation arose more from societal factors than innovation

2. What can be inferred from paragraph 2 about early public transportation?
   - (A) France led the world in technology in the early nineteenth century.
   - (B) The first public transportation systems in the U.S. were privately operated.
   - (C) Public transportation first developed from ideas borrowed from the military.
   - (D) Buses were initially only a luxury transportation for wealthier urban citizens.

3. According to paragraph 3, what was NOT a major problem with the omnibus system?
   - (A) Poor road quality
   - (B) Unacceptable safety
   - (C) Lack of speed
   - (D) Low level of comfort

4. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.
   - (A) There were early tests of excellent quality in New York and Chicago, but these test systems were not popular due to noise and pollution and were finally sold off to poorer areas, like Bangkok, which have higher water tables.
   - (B) In spite of their long-time popularity in cities like New York and Chicago, most other places, like swampy Bangkok, do not use these kinds of trains because they are considered to be visually and acoustically unpleasant.
   - (C) After being tried in New York and Chicago, elevated trains were considered too visible and loud and were not used except where necessary, like in Bangkok which cannot have a subway.
   - (D) Scientists in places like New York and Chicago proved that trains above the ground are excessively noisy and problematic. Therefore, the only places where they run today are where the ground in not penetrable, like in Bangkok.

5. Complete the table below to summarize the information about public transportation discussed in the passage. Match the appropriate statements to the one with which they are associated. Two of the statements will NOT be used.

Public Transportations	Statements
Streetcars	**Select 2** • •
Modern Developments	**Select 3** • • •

   - (A) Individual vehicles more common and popular than public transportation
   - (B) Grooved and embedded designs greatly increase utility
   - (C) Although original intent failed, many passenger wanted to get on and off at intermediary points
   - (D) Most common usage involves systems built under the ground
   - (E) System in which customers are not required to pay for use
   - (F) Steam power replaced by adaptations for electrical power
   - (G) Official policies contribute to decline in public usage

UNIT 10 Animal Rights

Among the social movements to have arisen along with and since the Industrial Revolution, one that remains somewhat controversial and of which the outcome is still far from decided is the animal rights movement. The first attested historical proponent is ancient Greek thinker Pythagoras. Following his belief that humans can reincarnate into animal bodies, he argued for treating animals the same as humans.

While similar views are widely shared in India where Hinduism has created a country where one-third of the population does not eat meat, the traditional western view developed quite differently. The view can be exemplified by the common interpretation of the Christian Bible. This maintains that all non-human animals are inferior to humans and, therefore, can be treated as objects. This was later echoed by western philosophers. For instance, René Descartes viewed animals as mindless machines, devoid of any form of thought or feeling.

Western society and governments first began to address the issue in the 1800s. This was due in part to the influence of new utilitarian moral philosophies which prescribed a minimization of suffering and unhappiness in the world. The world's first organization for animal rights was created in England in 1824 by a group led by several members of Parliament. The main goal was to reduce unnecessary animal cruelty, particularly to cattle. They achieved this by having laws passed and hiring inspectors to uncover violations. Similar groups soon sprang up in the rest of Europe.

The first such American organization was founded in New York City in 1866 by Henry Bergh. Its primary focus was on preventing cruelty to domestic animals such as pets and horses. The years spanning from these early efforts up until the 1970s bore witness to a multitude of new laws that defined and outlawed various aspects of animal cruelty and types of animal experiments. It is even maintained that one of the first acts of the Nazi government when they came to power in Germany was to put animal rights laws in place.

The modern animal rights movement is considered to have begun in the 1970s as a direct result of views articulated by ethics philosophers around this time. In this regard, the animal rights movement is unique among modern social movements. No other movement has come as an immediate result of developments in academic philosophy.

The person generally regarded as the founder of the movement is an Australian philosopher, Peter Singer. His book, *Animal Liberation*, is hailed by supporters as the bible of the modern movement. In this book, Singer argues that an animal's ability to reason is not a factor in their consideration for rights. He further contends that the fact that they suffer is sufficient reason to minimize that suffering. Singer also founded the Great Ape Project. This group is currently lobbying the United Nations for a declaration of basic rights for all of the great apes.

The best known organization in the modern movement is PETA, People for the Ethical Treatment of Animals. This group was founded in Virginia in 1980. It rose to early fame when co-founder, Alex Pacheco, went undercover in a primate research lab and gathered evidence of animal cruelty. His discoveries resulted in the arrest of the head researcher and changes in animal rights laws. PETA has since become the global leader in the movement, and its members are outspoken opponents of the fur trade, factory farming, and recreational hunting. PETA has also come under criticism for its ties to more radical groups. One such group is the Animal Liberation Front (ALF), which promotes violence as an acceptable tactic. ALF and similar groups were declared terrorists in 2003 under the Bush administration's Patriot Act.

Today, awareness of animal rights issues has certainly increased in society, with increased vegetarianism and labeling of the origins of food products. In recent years, Britain even banned the traditional sport of fox hunting in the interests of animal rights. However, society is currently fragmented on the issue, with many arguing that aspects of human rights require more urgent attention. It is evident that our collective stance toward animals will continue to evolve over the coming years.

1. What can be inferred from paragraph 3?

(A) At this time, volunteers worked to ensure enforcement of the new laws.
(B) Mistreatment of cattle had risen sharply in the early nineteenth century.
(C) Public outcry over proper sanitation in the meat industry aided activists.
(D) The first animal rights group held a great deal of power in the government.

2. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) During these times and continuing through to the 1970s, the laws banning cruelty, and some research methods were constantly being revoked and revised to be more lenient or stricter.
(B) A plenitude of legislation was created starting from this time and leading up to the 1970s, which legally stipulated what is and is not animal cruelty and what experiments could and could not be performed.
(C) It was not until the 1970s that many of the best new laws providing definitions of animal cruelty and prohibiting scientific abuses were finally voted in by more progressive legislators.
(D) Many persons who witnessed acts of horrid animal cruelty and unnecessary experiments testified before political tribunals during the early years and up until the 1970s to put new laws in place.

3. According to Peter Singer in paragraph 6, what capacity of animals demonstrates that they should have rights?

(A) Reasoning
(B) Empathy
(C) Suffering
(D) Spirituality

4. Why does the writer mention the Patriot Act in paragraph 7?

(A) To highlight the seriousness of the criticism mentioned earlier in the paragraph
(B) To imply that political interests are keeping animal rights issues from the public
(C) To reinforce a controversial claim mentioned several times throughout the passage
(D) To cast doubt on the noble intentions of the animal rights movement in general

5. Complete the table below to summarize the information about the time periods discussed in the passage. Match the appropriate statements to the one with which they are associated. Two of the statements will NOT be used.

Time Periods	Statements
Before 1824	**Select 2** • •
Since 1970	**Select 3** • • •

(A) British inspectors worked to catch people who are cruel to cattle.
(B) Henry Bergh founded an organization in New York to stop animal cruelty.
(C) The book, *Animal Liberation*, became the bible for animal rights supporters.
(D) Pythagoras argued that animals should be treated the same as people.
(E) PETA was founded.
(F) A philosopher stated that animals have no thoughts or feelings.
(G) A group attempted to secure rights for the great apes.

UNIT 11

Social Security Systems

1 Throughout history, lower life expectancy and subsistence-based lifestyles precluded the need for an organized system of social insurance. However, such arrangements were not unheard of. In ancient Greece, for instance, worries about what would happen to your body after death could be assuaged by joining a kind of burial fund. In this system, the member paid a fee in exchange for a proper burial upon death. During the Middle Ages, skilled tradesmen also made arrangements in their guilds to have available money should death occur. These small operations also extended into post-Renaissance times with fraternal organizations and labor unions.

2 The first national system was started in 1889 in Germany by Otto von Bismarck. Motivated by a desire to address a portion of the unhappy complaints of socialists, Bismarck set up the world's first system that paid retirement benefits to an entire nation of workers. It already included many features still found in current systems, including paying via income tax supplemented with employer and government contributions, as well as benefits for disabled workers.

3 The success of the German model is evident in its now widespread use in many developed nations. The United Kingdom implemented its own version of the system as early as 1911. Today, European nations all have long-standing social insurance systems. They even include many ideas not originally in the German model, such as public health care.

4 In the United States, the Great Depression of the 1930s quickly created a homeless epidemic of unprecedented proportions. In response Franklin Delano Roosevelt put forth his New Deal proposals to get people back on their feet with the help of social programs. Among these was the Social Security Act, signed into law on August 14, 1935. This created the Social Security Board, today called the Social Security Administration. Its task was to collect funds from almost all of the non-government workers in the United States and the territories of Alaska and Hawaii in order to provide minimal pensions for their retirement. In 1939, amendments were made to the law to include the survivors of deceased workers and people who were currently too old to work but who had not paid into the system.

5 The reason that it did not originally include everyone was that similar, smaller-scaled programs were already in place in certain industries, such as railroad workers and government employees. The original tax rate was a mere two percent, to be split between the employee and the employer. This has, however, been increased several times since starting in 1950. In 1946, the railroad retirement board merged their coverage with that of the Social Security Administration. Other workers, such as those working in public education, were later required by law to contribute to social security in addition to any private pension funds.

6 Disability benefits were first added to the program in 1956 along with another tax increase. In 1973, the system started a program called supplementary security income. This program provided need-based aid to the elderly, the blind, and other disabled persons. Today, approximately seven million persons receive these benefits.

7 The social security program in general was controversial from the beginning. Nevertheless, it was regarded as a great success through the seventies. However, financial reports that surfaced around that time showed that the system would require reorganization to manage the aging population that had an uneven ratio of workers to retirees. For instance, in 1940 there were nearly six workers for every retiree over age 65. However, in the year 2040, for instance, that ratio will be two to one. This could result in the bankruptcy of the social security system.

8 To attempt a fix of this issue, the Reagan administration changed social security and started a number of reforms in 1983. The main method used to handle the retirement of the baby boomers was to use the current surpluses to invest in government bonds. According to the plan, the bonds will increase in value over time and counteract the future strain on the system. Unfortunately, the soundness of this plan is still under debate, and the final result is not at all certain.

1. According to paragraph 4, what motivated the social security system in the U.S.?

(A) Industry
(B) World war
(C) Socialism
(D) Poverty

2. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) Initially, the program excluded some individuals, like the railroad or government workers, because they already had independent pension funds.
(B) Some sectors, such as the railroads and government, refused participation in social security at first because they preferred their own retirement funds.
(C) Early on, it was not yet feasible to quickly dismantle the long-standing private funds in some businesses, like railroads and government, so they were left out.
(D) A few industries, like railroad and government workers, unified to form their own independent funds outside of the social security system.

3. What can be inferred from paragraph 7?

(A) Roosevelt has generally been blamed for the current problems with the system.
(B) Some politicians hope to fix the system by merging it with that of other countries.
(C) The program has once again become controversial due to its financial problems.
(D) There will be fewer total workers in the United States in 2040 compared to 1940.

4. Why does the writer use the phrase "According to the plan" in paragraph 8?

(A) To negate a claim made previously in the paragraph
(B) To qualify the following statement as subject to doubt.
(C) To place emphasis on the advanced level of organization.
(D) To draw attention to the inner workings of the system itself.

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

Social security programs, while previously existing in some form, were not needed on a national scale until modern times.

(A) During the Middle Ages, occupational associations often offered some form of collective security funds.
(B) The basic modern system was pioneered by Otto von Bismarck in Germany and quickly spread through Europe.
(C) Franklin Delano·Roosevelt started the American system in 1935 and incorporated the railroad workers by 1946.
(D) The American system started in 1935 and grew in scope and popularity into the 1970s.
(E) On realizing that the system was in serious financial trouble, measures were taken to ensure its survival, but the future remains uncertain.
(F) The system will require immediate attention due to the aging of the population and the resulting shift in the ratio of workers to retirees.

SECTION 2

Sociology

PART A | Society and Culture

unit 12 Newspapers
unit 13 Television Addiction
unit 14 Culture and Technology
unit 15 Fast Food

PART B | Social Behavior

unit 16 Self-Help Books and Support Groups
unit 17 Feminism and Women's Rights
unit 18 Substance Abuse and Rehabilitation
unit 19 Multicultural Society

PART C | Family

unit 20 Nuclear, Extended, and Non-traditional Families
unit 21 Divorce and Remarriage
unit 22 Adoption

PART D | Demography

unit 23 Neighborhoods
unit 24 World Population Trends
unit 25 New Urbanism

PART E | Child Development

unit 26 Pre-natal Development, Birth, and Infancy
unit 27 Childhood
unit 28 Puberty

PART F | Education

unit 29 Kindergarten
unit 30 Primary School
unit 31 Educating Teens
unit 32 College and University

UNIT 12 Newspapers

1 Newspapers have always played a significant role in society. From their inception, they have provided information to the people and helped shape public opinions. They are a vital part of any democracy as can be demonstrated by the fact that freedom of the press is protected as a fundamental right in most countries. However, as technology has introduced new media to society, newspapers have had to compete. They have reinvented themselves time and again as a vital source of information and an integral part of society. As such, the history of the newspaper is a history of its changing role in society.

2 While there have been methods of getting news to the public since the dawn of civilization, it was not until the invention of the printing press in 1447 that the newspaper as we know it could be developed. Still, for 200 years publications were infrequent and highly specialized. While today there is a standard format for newspapers, this standard had not yet been developed. For example, newsletters were circulated containing trade and commerce information, or pamphlets relayed sensational stories of local happenings. It was not until the seventeenth century that newspapers such as we are accustomed to today were published. The first newspaper was called *Relation*, and it published a variety of material from news to entertainment to opinions every week.

3 The governments of the day foresaw what kind of power newspapers could have in swaying public opinion. With a populace that is blissfully unaware of its actions, the government can get away with almost anything. However, knowledge of injustice can lead to revolution, and that is precisely what the governments of the day wanted to avoid, so they tightly controlled the content of all publications. Liberal thinkers at the time, however, were giving credence to human rights and saw freedom of expression as one of those rights. Sweden became the first country to officially protect freedom of the press in their constitution in 1766. In time, it became a right and an obligation of the newspapers to disseminate news about government and politics to keep the people informed.

4 Newspapers remained the principle provider of information to the public until the 1920s when the invention of radio introduced a new medium for delivering news to the public. When new technologies threaten an industry, that industry must reinvent itself, and that is exactly what the newspapers of the day did. They began offering more in-depth coverage than they previously provided in order to compete with the radio broadcasts of the news. By changing their format, newspapers survived the invention of radio.

5 An even more appealing invention followed—the television. America was instantly enthralled with the television, and newspapers would have to make serious changes in order to compete. While the invention of radio drove newspapers to offer longer articles, editors responded to television by trying to mimic it. Newspapers trimmed articles down to provide a variety of shorter, more to-the-point articles just as television news broadcasts involved short stories in quick succession. While newspaper sales have declined since the invention of television, the medium has survived.

6 Newspapers are at a disadvantage when competing with television and radio because they take a long time to write, edit, format, and print. By the time a newspaper is printed, there is new news. The latest invention to threaten newspapers and other media is the Internet. People disseminate news all over the world instantly using the Internet. However, the Internet is a technology that newspapers can use to their advantage rather than viewing it as pure competition. Today, most newspapers post their articles online. They can offer more articles in the run of a day because they can publish them instantly. Some papers require people to pay to view their materials, but others rely on advertising fees. The invention of the Internet is unique because it provided opportunities in addition to challenges for the news industry. Today many people read the news online rather than having an actual paper delivered to their door. They are able to get more news each day because the newspapers can update their sites as new news occurs.

1. Why does the writer say newspapers are a vital part of any democracy as can be demonstrated by the fact that freedom of the press is protected as a fundamental right in most countries in paragraph 1?
   - (A) To stress the importance of newspapers in society
   - (B) To show how newspapers helped shape our constitution
   - (C) To demonstrate how newspapers can incite passion in readers
   - (D) To suggest that newspapers have an obligation to inform the public

2. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.
   - (A) The history of the modern newspaper began when humans started forming cities and disseminating news to the public.
   - (B) There are many different ways to inform the public of the news, but the printing press is the most efficient.
   - (C) There have always been ways to disseminate news, but the printing press allowed for the development of the modern newspaper.
   - (D) The invention of the printing press allowed cities to flourish as news could be easily published for all to see.

3. What can be inferred from paragraph 3 about governments at the time of newspapers' inception?
   - (A) They used newspapers for propaganda.
   - (B) They persecuted philosophers.
   - (C) They were corrupt.
   - (D) They were dictatorial.

4. According to paragraph 6, which of the following was not mentioned as a way in which newspapers competed with new technologies?
   - (A) Changing its format
   - (B) Mimicking the new invention
   - (C) Utilizing the new invention
   - (D) Lowering prices

5. Complete the table below to summarize the information about the competition newspapers face discussed in the passage. Match the appropriate statements to the one with which they are associated. Two of the statements will NOT be used.

Competition	Statements
Radio	**Select 2** • •
Internet	**Select 3** • • •

   - (A) Was the first invention to seriously threaten newspapers' readership
   - (B) Began a decline in newspaper sales that has continued since
   - (C) Was an invention that the newspaper could utilize
   - (D) Allowed news reporting to keep up with news has it unfolds
   - (E) Newspapers responded to it by making articles longer and more in-depth
   - (F) Virtually rendered newspapers obsolete
   - (G) Was not pure competition for newspapers

UNIT
13

Television Addiction

1 When television was introduced at the World's Fair in 1939, one commentator predicted that the invention would never take off because most American families did not have time for it. Today, according to several studies, Americans spend about half of their leisure time watching television. Televisions are typically the focal point in people's living rooms, and most households have more than one set. Television series are often a topic of conversation at work or among friends. The term "water-cooler show" describes shows that are so successful people tend to gather around the water-cooler at work to talk about last night's episode. Television has had a pervasive effect on society by altering the way people spend their time and the way they communicate with others.

2 The prevalence of television in the daily lives of most Americans is not necessarily a bad thing in and of itself. Indeed, it seems that humans have a natural curiosity about other people and enjoy watching others as their dramas unfold. They love to gossip about friends and neighbors. Sometimes this gossip is good natured, and sometimes it is malicious. But certain trends in society have robbed people of their neighbors to watch and gossip about. The distancing of the nuclear family from the community that characterized the twentieth century might not have happened if television characters did not provide us with such a ready replacement for neighbors in whom we can take an active interest.

3 People tend to report feelings of guilt in association with the amount of television that they watch and say that watching deprives them of their energy or that they feel hypnotized when they watch their set. Some even say that they are addicted to television. They watch more than they mean to, their habit interferes with social and familial events, and it poses a health risk because they are obese from sitting on the couch all day. All of these things are criteria for a diagnosis of addiction. Studies of television's effect on the mind can offer some insights into why television watching is the preferred leisure activity for so many people and how it has become like an addiction for some.

4 When there is a television turned on in a room, it is difficult for the people in that room to keep from looking at it. When people go into a restaurant with a television set that is on, they cannot help but glance at it occasionally. Even if they are engaged in an interesting conversation, it is very difficult not to look at the box. This is because television activates what is called the orienting response, which involves looking towards the source of the movement and sounds as well as other physiological responses. For example, the blood vessels going to the muscles constrict and the blood vessels going to the brain dilate. A reduction in heart rate is also observed. The orienting response was evolutionarily advantageous because it was important to pay attention to sources of movements and sounds as they may have been a predator or potential prey. Even infants, who cannot be expected to have any interest in football or the six o'clock news, exhibit this response when the television comes on.

5 It is clear that TV activates an intrinsic response in the human brain. There is nothing particularly unhealthy with this response, but it can become problematic. Studies have been preformed to determine how people respond to television both physiologically and behaviorally. These studies show that people feel relaxed, passive, and less alert while watching television. The feeling of relaxation ends immediately when the set is turned off. The feeling of passivity and the diminished level of alertness, however, persist. As such, the action of turning on the set is positively reinforced with the positive feeling of relaxation, but turning the television off is unpleasant because the feeling of relaxation is removed while the other negative feelings persist. This is what makes a substance or behavior addictive; it is very difficult to stop, and it takes control of people's lives. This definition seems to apply, in some cases, to television viewers.

1. Why does the writer mention "water-cooler shows" in paragraph 1?

(A) To denounce the emphasis we put on television
(B) To contrast high-quality programming with popular programming
(C) To imply that television is ruining Americans' work ethic
(D) To demonstrate the popularity of television in our culture

2. What can be inferred from paragraph 2 about gossip?

(A) It often leads to falsehoods which can destroy people's lives.
(B) It is a natural healthy part of human nature.
(C) It causes people to need more drama.
(D) It is the root of the collapse of people's sense of community.

3. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) People feel the need to turn on televisions that are turned off.
(B) People can't help but look at televisions when they're on.
(C) People are so addicted to television they have to have one in every room.
(D) People would rather look at a television screen than talk to people.

4. According to paragraph 5, how do people feel when they turn their television sets off?

(A) Relaxed
(B) Alert
(C) Passive
(D) Bored

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

Television is far more popular than was originally anticipated and has become a major feature in today's society.

(A) Television has coincided with a decrease in people's sense of community.
(B) Television has led to severe health problems in some, such as lowered heart rate.
(C) The sight and sound of a television activates an innate physiological response.
(D) Watching can be habit forming and some viewers even display signs of addiction.
(E) By exposing infants to television, parents inadvertently predispose them to TV addiction.
(F) Television causes people to feel relaxed and alert, but the feeling ends when the TV is turned off.

UNIT 14

Culture and Technology

1 Ten years ago, if a man was walking down the street and talking out loud to no one in particular, the people around him might have thought that he was talking to himself and was therefore mentally ill. Today, the image is not at all unusual, and it is assumed that the man who seems to be talking to himself is actually engaged in a conversation with someone else on his cell phone. Even if the cell phone is not visible, people give him the benefit of the doubt and assume that he is wearing an inconspicuous headset that cannot be seen. One simple invention drastically changed the meaning of an image in our culture. Technology can have subtle or radical effects on the way people interact with others in the community and understand the world around us.

2 Headsets and earphones and the devices to which they attach, like CD players and MP3 players, have truly changed the way the world is experienced. They allow people to easily shut out the outside world and create a personal space where they have control over the inputs. When earphones are visible, they clearly send a message to others not to interact with the wearer. The wearer can progress through each day sharing physical space with other people but never actually communicating with them. Portable music players also ensure that people never have to be alone with their own thoughts. People today are less comfortable with contemplating ideas or simply day dreaming than they were accustomed to years before. Silence makes many people severely uncomfortable. As a result, they supply something to provide entertainment so that they will not have to worry about entertaining themselves with their thoughts or engaging in communication with others.

3 As the entertainment industry has expanded, we have become increasingly reliant on it. We have also become passive participants in our entertainment. All we have to do is purchase the entertainment and purchase the device on which it will be delivered to us.

4 There are professional entertainers paid to entertain via personal worlds that people have created. This technology renders real people less and less important because it is so much easier to be passively entertained by professionals than to interact with others and take part in the diversion. Indeed, people who watch a lot of television report higher feelings of anxiety when faced with unstructured situations where they will have to interact with others.

5 Advances in music technology have changed the way people listen to music. They used to listen to the radio to find out about new artists, and when they heard one that they liked, they would go to the record store and buy an album which would then be taken home and listened to while admiring the artwork on the sleeve. If they liked it, they would listen to it over and over again for a few weeks until they are tired of it or until they found another artist of interest and bought another album to listen to. People talked about artists with friends and related to each other through a shared taste in music. They got together to listen to music, swap albums, and talk about music.

6 Now people have MP3 players and they have drastically changed the way that music is listened to. The sheer capacity of MP3 players means that people can actually store more songs than they could ever hope to listen to on a device capable of fitting in pants pockets. People buy music on the Internet, which opens up a whole new world of music to many listeners. This tool takes a great deal of power away from the record industry because a variety of music is accessible and people do not have to rely on radio to receive a sampling of what is out there. This means that artists have to become good at marketing themselves rather than relying on record companies to do their marketing for them. It also means, though, that musicians can get their product directly to the consumer without having to deal with the record companies who are more interested in what is marketable than they are in music itself. Therefore, shopping for music on the Internet allows the consumer to pick and choose what they really like from a large variety of music.

1. Why does the writer mention a man who appears to be talking to himself in paragraph 1?

(A) To give an example of how cultural meanings can change with new technology
(B) To show how some people cannot function as in a technological world
(C) To demonstrate how people have become less outgoing with new technologies
(D) To introduce the topic of mental illness and its effects on society

2. According to paragraph 2, which of the following is not a device that facilitates the notion of personal space?

(A) Headsets
(B) Earphones
(C) Radio
(D) CD players

3. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) It is difficult to take advantage of all of the options.
(B) They are a wasteful and ridiculously small.
(C) They are small but they do not have a lot of memory.
(D) They are small gadgets that can hold a lot of music.

4. What can be inferred from paragraph 6 about the future of the music industry?

(A) It is going to lose integrity.
(B) It is going to gain integrity.
(C) It is going to lose its audience.
(D) It is going to expand its audience.

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

Advances in technology have had a profound impact on the ways in which people relate to the world around them.

(A) People who were once thought to be mentally ill have been exonerated.
(B) Certain inventions have fostered a separation of the individual from the community.
(C) People today have a harder time communicating with each other than they used to.
(D) As people become more reliant on entertainment, they become uncomfortable with themselves.
(E) Record stores have had to reinvent themselves to attract new customers.
(F) The Internet may cause in sweeping changes in the music industry by reducing the need for record companies.

UNIT 15

Fast Food

1 The fast food industry provides millions of people with inexpensive food quickly and conveniently, and the secret to the industry's success lies not in its product but in its business model. The big franchises that lead the fast food industry offer the two things that people today desire most—name recognition and convenience. However, the rapid growth of the fast food industry has left its mark on society.

2 The success of the fast food industry owes at least some thanks to certain changes in the U.S. economy and society. The women's rights movement opened up the world of work outside the home to females and economic factors have forced double-income living to be the optimal situation for most. As such, American society today is comprised of extremely busy people who lack the time to plan, shop for, and prepare nutritious family meals. Everyone must eat, so when there is no time to cook and not much time to eat, fast food becomes an attractive option since it is fast, cheap, and filling.

3 People also do not dedicate time or possess the inclination to try innovative things. Fast food chains are appealing because patrons know exactly what they are going to receive when they see the Golden Arches or Colonel Sanders. Franchisees purchase the right to use a company name, its icons, and its business procedures, and in exchange, they benefit from the millions of dollars spent on advertising. Franchisers require that franchisees precisely follow the outlined procedures and purchase foods and packaging from the franchisers. It is of the utmost importance that every solitary restaurant bearing the franchise name has identical products. They spend inordinate amounts of money on advertising to create demand for their products, and if customers do not get exactly what they want, they will return neither to the restaurant where they purchased the food nor to any other restaurant bearing the same name.

4 To keep up with the incredible demand for fast food, the major chains have opened countless restaurants. People rarely, if ever, find it necessary to travel out of their way to locate fast food. Such has been the success of the franchise system in the fast food industry and indeed in other industries as well, that it has changed the landscape of America. The major chains have become so ubiquitous that many towns and cities have lost their originality. Shown pictures of random cities across America, one would be hard pressed to identify the location unless a well-known local landmark was included. The omnipresence of fast food chains has caused most towns and cities to look alike, and while people might bemoan the loss of character of our locales, it is the demand for uniformity that has allowed the chains to flourish.

5 Fast food franchises spend incredible amounts of money on advertising in order to ingrain their images on consumers, especially children. Through their advertising campaigns, they ensure that from a very young age, children learn to associate fast food icons with happy times and good food. Many restaurants feature play areas for kids and include toys as a bonus with kids' meals. Studies show that Ronald McDonald is the second most recognizable fictional character to children in America after Santa Claus. Fully 96 percent of children recognized the McDonald's icon. However, kids do not decide what they eat, their parents do, and adults too are bombarded with fast food advertising every time they turn on the television, open a magazine, or go for a drive in the car. It is inescapable, and it works.

6 For many, fast food is more than an occasional indulgence when time is of the essence, but rather it is a regular part of their diet and their lifestyles. About one fourth of the people in America eat fast food at least once a week and, what is more, it seems that the average American eats fast food three or four times a week. Fast food is typically very unhealthy as it is high in fat and additives, and low in nutrients. As a result, obesity is on the rise, especially childhood obesity. The fast food industry, in effect, has created dramatic changes in the way America looks and in the way Americans look and feel.

1. Why does the writer mention the women's rights movement in paragraph 2?

(A) To show a positive development that coincided with the rise of fast food
(B) To give an example of societal change that made fast food attractive
(C) To demonstrate the equal opportunity policy of fast food restaurants
(D) To explain why cheaper food was required for low income families

2. According to paragraph 3, what is the main reason people like fast food?

(A) It's cheap.
(B) It's convenient.
(C) It's familiar.
(D) It's delicious.

3. What can be inferred from paragraph 4 about the changes in America's landscape?

(A) They are ugly.
(B) They are beautiful.
(C) They are unique.
(D) They are worth it.

4. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) They use ads to trick children into thinking that fast food is fun.
(B) Ad campaigns are directed mainly at children because they are more impressionable.
(C) Young children learn to associate fast food with happiness from a young age.
(D) They use ads to instill positive associations with fast food icons in children.

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

The fast food industry has met certain needs of society but at a cost.

(A) In today's busy world, people want speedy service, and fast food gives them substantial meals at a low cost very quickly.
(B) Tremendous advertising efforts are made to ensure that everyone recognizes fast food icons.
(C) Children demand McDonalds because they like getting toys with their food and playing in the play area.
(D) The key to the success of the fast food industry is that it lends itself so well to the franchise system.
(E) Fast food restaurants pay workers low wages and give them very few benefits.
(F) Fast food has created a homogenous culture and landscape and has fostered an obesity problem in America.

UNIT 16

Self-help Books and Support Groups

1 Traditionally, there has been a very clear line drawn between the mentally ill and the mentally healthy. Mental illness diagnoses were reserved for people on the fringes of society who could not behave in a manner deemed appropriate. This distinction has blurred in recent decades, and there has been a growing recognition that even mentally healthy people need some help from time to time. Most people have difficulty functioning in some aspects of their lives at some time or another and need help developing strategies to cope. Having a problem, however, does not connote mental illness. So, instead of overwhelming the mental health profession with every problem, tools have been developed for laymen to help themselves, or for laymen to help each other, deal with life's difficulties. Self-help techniques do not require a mental health professional and are, therefore, more economical than psychological counseling. Self-help, of course, is not limited to psychological problems but can have economic or intellectual aims as well.

2 Hundreds of self-help books are published each year. Their themes range from getting rich to quitting smoking to saving relationships. It is a million-dollar industry wherein the authors use their personal experience to outline a procedure as a remedy for any difficulty or, alternatively, as a means of attaining any goal. The reader must take the initiative to buy the book and wholeheartedly follow its prescription for success.

3 The term self-help is something of a misnomer because, in reality, self-help programs involve people helping each other. The idea is that other people who have first-hand knowledge of the problems might be in a better position to help than a trained professional who has never personally dealt with such matters. Support groups are a type of self-help program which offer people with problems a social network of empathetic individuals who listen to and help them with shared problems. By working together and sharing personal experiences and coping strategies, people can gain valuable insights into their problems. They also find camaraderie and are not burdened by a sense of alienation. In other words, they do not have to feel as though they are alone or like no one understands what they are going through. Further, groups of people who are committed to solving a problem can pool their resources, share information, and educate one another.

4 A variety of support groups have been formed to help people deal with countless issues. The most well-known support group is probably Alcoholics Anonymous (AA). People who wish to overcome alcohol addiction find in AA a community of fellow recovering alcoholics who offer each other support and understanding which, coupled with a twelve-step program, has proven to be quite successful. In fact, it has been adapted for use in overcoming many other addictions and compulsive behavior disorders such as gambling. Alcoholics Anonymous and similar support groups appear to be highly effective for many people.

5 There are a number of reasons why people might want to meet with other people like them, and there are as many different types of support groups. Support groups can prove to be effective therapy for people with certain mental illnesses such as depression or anxiety. There are also support groups for family members of people who have such problems as mental illnesses or addictions. Weight management is a problem that many people struggle with, and they find working with other people to be an effective way to stay committed to the task of losing weight and keeping it off. Other groups have formed for people who do not actually have a problem but who face unique challenges because of one or more of their personal characteristics.

6 Support groups can also serve a social function in addition to the help offered the individual members. They can raise public awareness of their plights and advocate for social change. For example, support groups formed by people with physical disabilities can educate the public about the unique difficulties faced by the disabled. They can advocate for accessible facilities in their cities and towns. Support groups do not necessarily involve problem solving within the group but actually outside of the group through education.

1. What can be inferred from paragraph 2 about authors of self-help books?

(A) They have achieved a high level of education.
(B) They have thoroughly researched their subject matter.
(C) They are quacks who take advantage of unfortunate people.
(D) They have experienced a great deal of personal success.

2. Why does the writer claim the term self-help is something of a misnomer in paragraph 3?

(A) To imply that the programs are not as effective as they claim
(B) To show how the industry is based on a false premise
(C) To clarify a possible source of confusion
(D) To demonstrate how the term is used in context

3. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) People who want to cut back on their drinking can utilize the tools available through AA such as the twelve-step program.
(B) AA offers a supportive environment and an effective program for people who want to quit drinking.
(C) People who quit drinking say that AA's twelve-step program is the most effective method available.
(D) AA is a group of recovering alcoholics who help each other cope with their new lives without alcohol.

4. According to paragraph 5, which of the following is not mentioned as a function of support groups?

(A) Providing professional care for the mentally ill
(B) Providing empathy for people with problems
(C) Sharing information and educating members
(D) Promoting social awareness of certain causes

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

Self help is an economical and effective alternative to professional mental health care.

(A) Self-help books can earn millions of dollars.
(B) Self-help books and support groups both utilize the expertise of personal experience.
(C) Support groups provide a community of understanding individuals who help each other through their problems.
(D) Many people have lost weight through weight management programs.
(E) Self-help is important because the mental health sector is overburdened.
(F) There are many different types of support groups with varying aims and objectives.

UNIT 17 Feminism and Women's Rights

1 Feminism is the belief that women are socially, politically, and economically equal to men. This definition seems straightforward enough, but the term feminism oftentimes carries a negative connotation. Indeed, many women who are actively engaged in achieving equality for their sex do not consider themselves feminists. Further, there exists a great deal of debate among feminists as to how they should be defined and what their aims should be. Throughout history, women's roles have been evolving, and women have faced immensely different challenges at different points in time. Women in extremely different societies also face drastically different obstacles. Therefore, the ongoing plight of the feminist can vary from one era to the next or from one society to the next.

2 Women have always been quite concerned with their rights, but the first organized women's movement in the United States did not begin until the nineteenth century when women started demanding the right to vote. These women recognized that denial of the vote was preventing them from actively participating in the democratic process and, as a result, they were not represented. People who were not entitled to vote had literally no voice in politics and absolutely no voice in the manner in which they were governed. This first wave of feminism was concerned with sexism within the law. It was easily identifiable because it was officially mandated, but that still did not make the law easy to change. Women and men dedicated decades of their lives to affecting change, and they achieved their goal in 1920 when Congress amended the Constitution giving women the right to vote.

3 World War I and World War II profoundly impacted women in America. As young men were drafted into battle during the war, women were charged with maintaining the war effort at home, which meant that they were required to work in the factories manufacturing materials for the war. Significant numbers of women were actually working outside of the home, but when the war ended, these factories shut down permanently. Moreover, young men were returning from Europe, and they fully expected to have jobs waiting for them. Women were expected to return to the kitchen while the men continued where they left off. However, many women were not fortunate and did not have men returning home to take care of them. Sadly, they were now widowed and had the financial burden of taking care of a family but were unable to find employment. Many women who had played their part during the war effort discovered that they enjoyed working outside of the home and did not want to return to the kitchen. This sparked a new era of feminism that sought equal opportunities between the sexes.

4 While the first-wave feminists adhered to a clearly defined goal, suffrage, the second wave of feminism, which began after World War II, was concerned with more intangible concepts such as discrimination and oppression. Feminists of this era examined the power structure in American society, identified that it was male dominated and attempted to affect change. They challenged gender stereotypes and fought for equal opportunities at school and in the workforce. They demanded that women have control over their own bodies, particularly their reproductive systems. The development of birth control empowered women to delay pregnancy until they chose, or indeed, choose not to have children at all. And while the first-wave goal of amending the Constitution to give women the right to vote was successful, the second-wave aim to guarantee equal rights in the Constitution failed. Still, the hard work of many people during this era went great distances in reducing discrimination and promoting equality between the sexes.

5 The struggle for women's rights has indeed greatly progressed in the United States and also in many other nations worldwide. Not only is it acceptable for women to have a career outside of the home; it is expected. Women are active participants in education, business, and politics. However, they still face challenges in overcoming gender stereotypes and challenging cultural expectations. Sexism has, indeed, taken new forms in the late twentieth and early twenty-first centuries in America, but women continue to persevere.

1. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) People wasted many years trying to change the Constitution to give women the right to vote.
(B) Women and men worked together to achieve their mutual goal of changing the Constitution.
(C) Women and men were granted equal rights in 1920 after many years of hard work.
(D) People who advocated change for many years reached their goal when women's suffrage was granted in 1920.

2. Why does the writer mention World War I and World War II in paragraph 3?

(A) To state they were significant events not only in Europe but in America as well
(B) To explain they had an important implication for the Women's Rights Movement
(C) To show how many young women came to be widowed and thus needed to work
(D) To demonstrate why many young women became interested in the armed forces

3. What can be inferred from paragraph 4 about equal rights in America today?

(A) Many women do not want to have equal rights.
(B) They were eventually included in the Constitution.
(C) They are not protected by the Constitution.
(D) Women have attained equal status to men.

3. According to paragraph 5, which of the following was not mentioned as a goal of feminists in history?

(A) Equal conscription
(B) Equal opportunity
(C) Reproductive rights
(D) The right to vote

5. Complete the table below to summarize the information about the waves of feminism discussed in the passage. Match the appropriate statements to the one with which they are associated. Two of the statements will NOT be used.

Waves	Statements
First Wave	**Select 2** • •
Second Wave	**Select 3** • • •

(A) Focused on tangible problems
(B) Examined abstract concepts
(C) Women worked outside the home for the first time in history
(D) Birth control gave women control over their bodies
(E) Both women and men lobbied for suffrage
(F) Many women were widowed and left with small children
(G) Gender stereotypes were challenged

UNIT
18

Substance Abuse and Rehabilitation

1 Substance abuse is an immense problem that seriously interferes with the normal functioning of people's lives. A substance can be any kind of drug—legal, illegal, or controlled. Legal drugs include alcohol or tobacco. Illegal drugs consist of substances such as cocaine or heroin. Controlled drugs refer to those drugs that require a prescription from a doctor such as pain killers or anti-anxiety medications. Many people take these drugs or substances recreationally or to help with a medical or mental condition; most experience no problems with them. Substance use becomes substance abuse, however, when it has a negative effect on the user's physical or mental health, or when it harms other people.

2 Psychologists define substance abuse as the continued use of a substance despite its negative consequences. When substance use interferes with a person's occupational pursuits, it is then considered problematic. For example, if a person habitually misses work or does not perform up to potential because of substance use, that person is engaged in substance abuse. Another indication of substance abuse is when people repeatedly put themselves in danger when using the drug. For example, people who drive their vehicles while under the influence of alcohol can be said to be substance abusers. People who have frequent run-ins with the police while using their drug of choice are also considered to be substance abusers. Finally, when a person continues to use a drug despite its harmful effect on his or her interpersonal relationships, that person is suffering from substance abuse.

3 Giving up a drug can be difficult, especially if the person has become dependent on the drug. Dependence can be physical, or it can be psychological. Physical dependence occurs as the brain and body cope with having the drug in the system. The first time people use a drug, it requires very little of the substance for them to reach the desired effect. However, as they use the drug more and more, they require larger doses in order to achieve the same high that they achieved the first time. This is because they are developing a tolerance to the drug. The body responds this way in order to maintain normal functioning. But these people do not desire normal functioning; they desire a high and therefore use more and more of the drug. In time, the body becomes accustomed to having a certain amount of the drug in its system and that becomes the norm. When the body's store of the drug is not replenished, the body craves more to achieve normalcy. This is called withdrawal, and it is characterized by symptoms as mild as edginess or as severe as hallucinations.

4 Some substances do not have this effect on the human body, but people become dependent on them nonetheless. Psychological dependence is akin to a habit that the user is dependent on because he or she believes that the drug is necessary for normal functioning. Most people who are physically dependent on a substance are psychologically dependent on it as well. However, there are people who are psychologically dependent on substances without being physically dependent on them.

5 Drug cessation is extremely difficult for substance abusers who are dependent on the drug, whether physically, psychologically, or both. As such, drug rehabilitation programs have been designed to help people get off drugs by addressing both physical and psychological aspects of the dependence. A detoxification process is prescribed to help the patient with withdrawal symptoms. The particular regime depends on the substance and its characteristic withdrawal symptoms and severity. For example, severe withdrawal symptoms are associated with heroin cessation, and so a drug called methadone is often used to ease the patient off of his or her dependence on heroin. This method is controversial, however, because methadone itself is an addictive substance.

6 Psychological counseling, of course, is important to help people deal with the psychological element of their dependence. Patients are encouraged to examine their habit and develop strategies for dealing with life situations without resorting to drug use. They learn to recognize patterns which might cause them to relapse so that they can avoid those situations.

1. Why does the writer mention different types of drugs in paragraph 1?

(A) To show how some drugs are more addictive than others
(B) To explain why some drugs are legal and some are not
(C) To emphasize the dangers of drug use
(D) To point out that all drugs can be abused

2. According to paragraph 2, which of the following would not indicate substance abuse?

(A) Frequent absenteeism
(B) Regularly drinking and driving
(C) Habitual drug use
(D) Harming family relationships

3. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) To demonstrate the devastating effects of heroin use are eased by replacing the drug with methadone
(B) To demonstrate heroin is one of the most difficult addictions to get over because of the terrible withdrawal
(C) To demonstrate heroin withdrawal requires additional drug use as the symptoms are so severe
(D) To demonstrate methadone can help patients get through severe heroin withdrawal symptoms

4. What can be inferred from paragraph 5 about patients on methadone?

(A) Some replace one addiction with another.
(B) They suffer less severe withdrawal symptoms.
(C) They have a higher success rate than those who quit cold turkey.
(D) Some resume heroin use after rehab.

5. Complete the table below to summarize the information about substance abuse discussed in the passage. Match the appropriate statements to the one with which they are associated. Two of the statements will NOT be used.

Effects of Substance Abuse	Statements
Physical	**Select 3** • • •
Psychological	**Select 2** • •

(A) Body builds a tolerance to the substance
(B) User can easily quit
(C) User experiences withdrawal when denied substance
(D) Users believe they cannot function normally without the substance
(E) User does not experience harmful results from substance use
(F) Rehabilitation involves counseling
(G) Rehabilitation involves detoxification

UNIT 19

Multicultural Society

1 Europe is a small continent comprised of numerous different countries, each maintaining its own culture and identity. In the eighteenth and nineteenth centuries, there was much war and conflict aimed at establishing nation states and preserving sovereignty. Meanwhile, a multitude of people were leaving Europe in order to escape persecution and oppression or to improve their lot in life. They sought freedom and opportunity in a new land called the Americas. Countries there were being established by groups of immigrants who possessed distinct identities and cultures. Indeed the land that they were colonizing was home to several groups of people with their own unique identities and values, that is, the original native tribes of the Americas. Further, some of the settlers brought with them African slaves, who added yet another cultural identity to the mix.

2 Countries were continually being founded by an array of European immigrants, albeit with disregard for the original inhabitants of the land. Still, these new countries were unique for their cultural diversity. The United States of America was established primarily by English-speaking immigrants. However, the founding fathers recognized the linguistic diversity of the new country. They accordingly refused to adopt an official language. National identity was expected to form naturally as immigrants became assimilated. The metaphor of the melting pot was used to describe how people of different cultures amalgamated into one. Immigrants were expected to gradually assimilate into American culture as they climbed the social ladder. However, critics point out that this is a rather idealized view. European immigrants often prospered in the new land. Non-Europeans, on the other hand, faced greater challenges.

3 Canada was founded mainly by French and English settlers. Its early history is characterized by an intense power struggle between the French and the English. Again, these were not the only two ethnic groups, but they were the two major ones vying for supreme power. In 1867, Canada officially became a country and declared itself bilingual; that is, it had two official languages—English and French. In practice, however, the French often suffered a disadvantage. As such, by the twentieth century they were insistently demanding an official policy on bilingualism and biculturalism. Others were quick to point out, however, that the French were not the only minority in Canada and advocated an official policy of multiculturalism which was adopted in 1971.

4 Multicultural policies celebrate the variety of cultural differences. They sincerely encourage the preservation of cultural identity. As a result, generous federal funds are allocated to meet such ends. For example, the government might provide sponsorship for festivals which celebrate cultural heritage, or it might subsidize newspapers that are published in a minority language. This innovative approach has been described in contrast to the melting pot as a mosaic. Immigrants need not lose their cultural identity as they integrate into the culture of the host nation. Multicultural policies have been officially adapted by several countries around the world.

5 Opponents of multiculturalism state that it undermines national unity. They feel that it discourages assimilation in the immigrants' new land, which can lead to conflict. Cities get fragmented into culturally-distinct neighborhoods. As such, immigrants do not have to learn the language of the country or assimilate into the mainstream. Cultural identity is then preserved at the expense of integration. Further, it is argued that multiculturalism may allow oppression to continue within cultural groups. There are some aspects of certain cultures that the host country does not and should not respect, such as the oppression of women. Oppressive behavior is not tolerated from native citizens, but multiculturalism may inadvertently protect these practices in ethnic communities.

6 In recent years there has been an increasing backlash against multiculturalism, particularly in Europe. Many European countries that once endorsed multicultural policies have altered course. They are limiting immigration and enforcing integration measures for new immigrants. For example, immigrants might be required to take courses in the language and history of their host nation. Tests are designed to ensure that new immigrants are prepared to take on the cultural values of the host nation. The hope is that national identity will become more congruent as immigrants leave their culture behind and adapt new values.

1. What can be inferred from paragraph 1 about many European settlers?
   - (A) They were seeking economic opportunity and freedom of religious belief.
   - (B) They were interested in establishing trade relations with the native peoples.
   - (C) Despite having been oppressed in Europe, they oppressed others in the Americas.
   - (D) Despite their moral beliefs, they engaged in the slave trade for economic reasons.

2. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.
   - (A) It was not long before Canadians began demanding that the bicultural policy be altered to include all minorities.
   - (B) Minorities demanded that the Canadian government recognize their status through the multicultural policy of 1971.
   - (C) Some noted that there were other minorities in the country and pushed for the multicultural policy which went into effect in 1971.
   - (D) The French minority began demanding equal status when, in 1971, a multicultural policy grouped them with other minorities.

3. Why does the author mention the mosaic in paragraph 4?
   - (A) To show how differing cultures assimilate into a new culture
   - (B) To promote the idea of cultural diversity within a nation
   - (C) To demonstrate the European approach to cultural integration
   - (D) To illustrate contrasting approaches to immigration

4. According to the passage, which of the following was not an argument against multiculturalism?
   - (A) It does little to instill a sense of national unity.
   - (B) It promotes false beliefs in cultural supremacy.
   - (C) Cities are split into ethnic divisions.
   - (D) Oppression can be overlooked when it's part of culture.

5. Complete the table below to summarize the information about the United States and Canada discussed in the passage. Match the appropriate statements to the one with which they are associated. Two of the statements will NOT be used.

Countries	Statements
United States	**Select 2** • •
Canada	**Select 3** • • •

   - (A) Never officially adopted a policy of multiculturalism
   - (B) Has no official language
   - (C) Has two official languages
   - (D) Has an official bicultural policy
   - (E) Has a large French population
   - (R) Described as a melting pot
   - (G) Described as a mosaic

UNIT 20

Nuclear, Extended, and Nontraditional Families

1 Humans, like all creatures, have two basic instincts–to survive and to reproduce. Over the years, they have developed strategies and social institutions to facilitate survival and reproduction. This reproduction involves not only procreation but also the socialization of children so that society itself is reproduced. The family, in all its forms, has evolved as an optimal strategy in these realms. People organize themselves into small groups, usually genetically related, and cooperate with each other to increase the chances of survival and to propagate the species and society.

2 Different circumstances demand different types of families. One common type is the nuclear family which includes two adults—one male and one female—and their child or children. This type of family evolved early in human existence as an economic and social arrangement of cooperation that had benefits for all members. It involved the specialization of labor between men and women where the larger, more aggressive of the two, the male, would hunt for food and protect the family. The woman, being biologically equipped to bear children, was a natural candidate for taking care of the young and gathering vegetation.

3 The family is a societal institution, and as society changes, so too does the family. Two main factors have allowed for changes in the traditional roles of men and women in the nuclear family. First, society has created institutions outside of the home that take on some tasks that were the responsibility of the family. For example, schools now play a huge role in the upbringing of children by both educating and socializing young people. Second, improvements in the status of women have made it socially acceptable for women to work outside of the home. As such, while some women choose to make homemaking their career, many pursue a career outside of the home.

4 Sometimes, circumstances may demand an alteration to the basic format of the nuclear family. A nuclear family can evolve into an extended family when other family members come to live in the same household. For example, when grandparents live in the same home as the nuclear family, it is considered to be an extended family. This may occur because one of the grandparents becomes ill and needs to be taken care of. In other cases, people may choose to live in an extended family household due to close family ties or for the economic benefits of cooperation. In fact, extended families are the norm in many societies.

5 Nontraditional families can be formed as a result of a failed relationship between the parents or the death of one parent. One parent might be absent because of a personal choice not to take part in child rearing before the first child is born. This occurs when pregnancies are accidental or the biological father chooses not to support the woman and child. Alternatively, a parent might be absent because the couple chooses to split up. Thirdly, death can remove a parent from the family unit. Single parents can become extended families by moving in with their parents for support. Traditionally, this was a common scenario, but again, as social institutions take on part of the responsibility of child rearing, single parenthood can be a viable option for many.

6 Single-parent families need not remain single-parent families indefinitely as many people remarry to form stepfamilies. If, for example, a single mother marries a man who is not the biological father of her children, he becomes their stepfather, and if he has his own biological children, then all of the children become step-siblings. Also, if the couple proceeds to have children together, then they will be the half siblings of the children already in the family.

7 Yet another form of nontraditional family is the childless family. Many people choose not to procreate but still prefer to live in a relationship with another adult. Double-income-no-kids families enjoy a great deal of freedom and economic advantages. Some couples are unable to have children for health reasons. Society's growing openness towards homosexuality has also allowed for a new type of nontraditional family. Some countries in the world have legalized gay marriage or recognize civil unions. Homosexual and lesbian couples may form childless families, or they may adopt. There are so many different types of families today, none can really be considered to be the norm.

1. Why does the writer claim humans have two basic instincts in paragraph 1?

(A) To introduce the topic of the family as fundamental to human existence
(B) To show that the family is the optimal social organization for humans
(C) To explain human motivations for various behaviors
(D) To demonstrate a parallel between two phenomena

2. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) Socially-made organizations perform some functions of the family.
(B) Society first made organizations, and then replaced them with the family.
(C) The first socially constructed institution was the family.
(D) The family existed independently before socially-made organizations.

3. According to paragraph 4, which of the following is not an example of an extended-family household?

(A) A woman and her children move in with her parents when her husband leaves her.
(B) A man adds an extra room to his house so his ailing father can move in.
(C) A woman leaves her husband because he has been having an affair with her sister.
(D) A woman moves in with her sister's family because she lost her job.

4. What can be inferred from paragraph 5 about single-parent families?

(A) They are more often headed by men than women.
(B) They are more often headed by women than men.
(C) They are more acceptable than before.
(D) They are less socially acceptable than they once were.

5. Complete the table below to summarize the information about the family types discussed in the passage. Match the appropriate statements to the one with which they are associated. Two of the statements will NOT be used.

Family Types	Statements
Extended	**Select 2** • •
Nontraditional	**Select 3** • • •

(A) An unplanned pregnancy results in a couple getting married and raising the child together.
(B) An unplanned pregnancy results in a couple splitting up and the woman moving in with her parents to raise her child.
(C) An unplanned pregnancy results in a woman placing a child for adoption.
(D) A man and his wife decide to add a room to their home so his mother can move in and help with the kids.
(E) A lesbian couple gets married and adopts a child.
(F) A man becomes a single father when his wife is killed in a car accident.
(G) A single mother of two marries a single father of one, and they have a fourth child together.

UNIT 21

Divorce and Remarriage

1 Marriage is a legal contract entered into by two adults who are not genetically related and who wish to spend their lives together as husband and wife. Both must be single, and if one or both parties enter into the contract under false pretenses, the contract is considered null and void, and the couple is issued an annulment. For example, if either the bride or the groom were underage at the time of the wedding, then the contract would be void, and the couple would be issued an annulment. Because you have to be an adult to marry, it would be as if the marriage had never taken place. However, if the marriage is lawful, that is, if the contract is valid and binding, and one or both parties then break the terms of the contract, the contract can be terminated. Terms of the contract include the vows made at the wedding such as fidelity and love. So, for example, if one partner in the marriage engages in adultery, he or she has broken a term of the contract, fidelity, and as such, the injured party can terminate the marriage, that is, divorce the offending party.

2 In the late 1960s, the option of a no-fault divorce was adopted allowing couples to decide to end a marriage even though neither party had violated the contract. This was followed by a sharp increase in the divorce rate, which some people see as an indication of an erosion of family values. Others see it as a victory for people who would otherwise be trapped in unhappy marriages, and others point out that the statistics may be exaggerated.

3 Contemporary wisdom states that more than 50 percent of marriages in the United States end in divorce, but this figure does not provide a very accurate picture of what is happening. The problem is that the number of divorces in a year is a function of the number of marriages in that year. Statisticians count how many marriages there were and how many divorces there were and then calculate the divorce rate as a percentage of new marriages. Thus, for example, a decrease in the marriage rate can make the divorce rate seem much higher. Long term studies give a more accurate picture of the divorce rate in the U.S., and these studies place the figure at about 31 percent in 2002. While people claim that the divorce rate has been increasing in recent years, it has actually been decreasing since 1980.

4 Divorce can be devastating for those involved, particularly when the couple has children. It often entails a messy legal battle to determine which parent will care for the children and how shared assets will be divided. The parent who is not granted custody of the children is often obliged to pay child-support payments to the spouse who is taking on the sole responsibility of child rearing. The parent who is paying child support is generally entitled to visiting rights, which can be worked out between the divorced couple, or, if this creates conflict, a judge can outline the terms. While divorce may be difficult on children, most kids prove to be very resilient. Some parents are known to stay in unhappy marriages because of their belief that a divorce would adversely affect their children. However, the emotional impact of living in a home with unhappy parents can be far worse than the emotional impact of divorce. This is especially true when abuse is occurring within the home.

5 Just as rates of marriage and divorce have been changing, rates of remarriage have shown considerable variance over the years. They seem to be tied to rates of first marriages; that is, a change in second-marriage rates is reflected in a change in first-marriage rates. So, it would seem that if fewer people are marrying, fewer people are remarrying, and if people are marrying more, they are remarrying more. The chance of a second marriage ending in divorce is actually higher than a first marriage, contrary to what one might think. Many people enter into their second marriages believing that they have learned from their mistakes, but their second marriage probably won't last as long as their first.

1. According to paragraph 1, which of the following would not result in an annulment?

(A) The groom is married to another woman at the time of the wedding.
(B) The bride and the groom are first cousins.
(C) The groom was 17 at the time of marriage.
(D) The wife had an affair with the husband's friend.

2. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) The offending party may opt to break vows in order to end the marriage.
(B) The offending party is at fault for breaking the contract and cannot stop the divorce.
(C) Adultery breaks a term in the contract and is therefore grounds for divorce.
(D) Adultery is one of the main reasons that couples file no-fault divorces.

3. What can be inferred from paragraph 2 about many marriages prior to the 1960s?

(A) Many were unhappy.
(B) Most were happy and healthy.
(C) Many ended because of adultery.
(D) Most were a result of social pressure.

4. Why does the author state the emotional impact of living in a home with unhappy parents can be far worse than the emotional impact of divorce in paragraph 4?

(A) To demonstrate a flaw in some people's reasoning
(B) To caution readers against a decision that will harm their children
(C) To illustrate why parents should consider their children's feelings first
(D) To give an example of how divorce is destroying family values

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

People enter into a legal contract when they get married.

(A) They cannot get married if they are brother and sister.
(B) Marriages can be terminated if one partner breaks the terms of the contract, or if both decide to end it.
(C) Contrary to popular belief, divorce rates are declining.
(D) Children are always the ones who suffer most in a divorce.
(E) Remarriage is a good way to restore stability to the home after a divorce.
(F) While divorce can be devastating, it doesn't seem to scare divorcees from trying a second time.

UNIT 22 Adoption

1 Parents have certain rights and responsibilities for their children unless they choose to forego their care, or if the state deems them unfit to be legal guardians. Sometimes prospective parents feel that they are not emotionally equipped for the responsibility of raising a child, nor are they financially prepared for the burden. Some women in various societies may fear the stigma that would be attached to them if they chose to raise a child alone. Placing a child for adoption is sometimes in the best interest of the child, the mother, or both. Some children are put into foster care not because their parents chose to place them in the care of someone else, but because they abused or neglected them. In these cases, the state intervenes and attempts to find more appropriate living conditions for the child if the parent or parents cannot prove that they are fit to be caregivers.

2 There are several reasons why people might choose to adopt a child rather than procreating. They may be physically unable to reproduce; that is, they may be infertile. They may also be either single or part of a same-sex couple and therefore lack a partner of the opposite sex with whom they can conceive a child. Some simply feel that it is more responsible to adopt a child that has already been born than to bring a new life into a world which they believe is becoming overpopulated. Whatever their reasons, adopting a child can be a most rewarding experience, although some people are wary of adopting because of media hype surrounding certain cases of adoptions gone wrong. For example, they might fear that the birth mother will change her mind and return to claim the child after he or she has bonded with the new family. However, the majority of adoptions go very smoothly.

3 There are two main types of adoption—open and closed. Historically, all adoptions were open because when people had unwanted children, they found someone who wanted a child and gave the baby to them. The child was often taken care of by a relative or neighbor of the biological mother, so she would always have contact with her child. However, the arrival of the Victorian era brought with it value judgments and a troop of people who took it upon themselves to protect the world from those who they saw as morally depraved. Unwed mothers were considered a disgrace and had their illegitimate children taken from them and put in orphanages, where the infants would be displayed for would-be parents who came along and chose one for themselves.

4 It wasn't until the 1940s and 1950s that states started to make laws regarding closed adoption. At this time, laws were designed mainly to protect the adoptive parents by making it difficult, if not impossible, for the birth parents and the child to be reunited. Records of the child's birth parents were sealed, and the child was issued a brand new birth certificate with his or her adoptive parents' names on it. The child could grow up never knowing that he or she was adopted if the parents chose not to reveal such information. Indeed, for reasons that are not immediately clear, there were adoptive parents who wanted to portray themselves as the biological parents of their children. Adoption agencies even attempted to match children with parents who bore a physical resemblance.

5 Open adoptions are increasingly becoming the norm. This recent trend began in the 1980s when an amazing shortage of babies gave biological mothers negotiating power in the terms of the adoption. They could now legally demand an active relationship with their child. Some arrangements allow the birth mother to contact the child through an intermediary who delivers letters and pictures. The birth mother still would not be aware of where the child lived. Other arrangements permit direct communication via mail, and still even more open arrangements allow for ongoing contact. The birth mother can visit the child at scheduled times, and the child grows up knowing all the parents—biological and adoptive. Studies show that this is the optimal arrangement for the emotional health of the child and for everyone involved.

1. What can be inferred from paragraph 2 about cases of biological mothers trying to claim rights to their babies?

(A) They are mentally unstable.
(B) They have no legal rights.
(C) It is a rare occurrence.
(D) It is a common occurrence.

2. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) But the Victorian age made it socially unacceptable for a woman to have a child out of wedlock, so people tried to protect her.
(B) But the Victorians protected unethical people because they thought it was their duty to show them the way.
(C) But when a group of Victorians arrived, they always found unethical people and tried to protect them from the world.
(D) But many during the Victorian age were judgmental and thought they should protect society from unethical people.

3. According to paragraph 4, why did adoption agencies start making it difficult for adoptive children to be reunited with their biological parents?

(A) To protect the adoptive parents
(B) To protect the biological mother
(C) To protect the adoptive child
(D) To protect themselves

4. Why does the writer mention the baby shortage of the 1980s?

(A) To suggest that it is not as easy to adopt as is commonly thought
(B) To demonstrate the impact of birth control on the adoption industry
(C) To explain the circumstances that led to open adoptions being more common
(D) To show why adoptive parents have become more guarded about privacy

5. Complete the table below to summarize the information about adoptions discussed in the passage. Match the appropriate statements to the one with which they are associated. Two of the statements will NOT be used.

Adoptions	Statements
Open	**Select 2** • •
Closed	**Select 3** • • •

(A) Common from the 1940s to the 1980s
(B) Became illegal in the 1980s
(C) Birth records are sealed when adoption is complete
(D) Biological parent can receive letters and pictures in the mail
(E) Biological mother does not know where child lives but can keep in touch through an intermediary
(F) Child may grow up believing his adoptive parents are his biological parents
(G) Child is returned to home of biological parent after a certain amount of time

UNIT 23

Neighborhoods

1 There is probably nothing more telling than a neighborhood with regard to a person's socio-economic status. Neighborhoods are very clearly demarcated according to income level, and there is not much overlap. Poor people live in poor neighborhoods that are characterized by dilapidated buildings, broken glass, graffiti, and a general state of disrepair. People do not have the money to dedicate to creating an aesthetically pleasing environment. Poor neighborhoods are densely populated, crime rates are high, and many do not feel safe in their own homes or on their own streets.

2 Middle-class and wealthy neighborhoods, conversely, feature big houses for small families. Families have the funds to make sure that their houses and the large yards that surround them look nice. Population density is low and everyone has plenty of space. A high police-population ratio keeps crime rates quite low, and people generally feel safe and secure in and outside of their homes. Some of the wealthier neighborhoods are even gated and hire a guard to monitor the people entering the neighborhood. Guards require people to show picture identification and to name the person they have come to visit before they are permitted to enter.

3 Upward mobility—moving from a poor neighborhood to a wealthier neighborhood—is very difficult. A person who is born and raised in a poor neighborhood is unlikely to overcome the circumstances and get a job that pays a salary high enough to allow a move into even a middle class neighborhood. This is because the segregation of people according to their socio-economic status, that is, the separation of groups of people into neighborhoods, creates pervasive cultural differences that can be difficult to surmount.

4 First, schools in poor neighborhoods tend to be overcrowded and underfunded. As such, students receive less individual attention from teachers and have less access to resources such as books and computers than do wealthier children in wealthier neighborhood schools. Social pressures make it far less likely that students in poor neighborhoods attending poor schools will graduate high school, much less attend college, which would significantly improve their chances of upward social mobility.

5 Secondly, networking is hugely important when it comes to being successful. People who grow up in poor neighborhoods and go to poor schools do not have the opportunity to make useful contacts. Those who do manage to get a good education will still be at a disadvantage when competing with people who are already personally acquainted with the people who can help them to achieve success. What's more, being raised in an environment of financially successful people puts children at an advantage because they are socialized to be wealthy themselves. They learn to behave in such a manner as to allow them to fit in with other wealthy people.

6 Just as privileged children are socialized to fit in with their privileged peers, poor children are socialized to survive in poor neighborhoods. This often means learning violent behaviors or other criminal activities, which may be seen as the only feasible way to earn money. However, criminal activity almost always leads to criminal records, which then make it very difficult to get work. Thus, criminals often feel that they have no other option than to return to a life of crime.

7 Furthermore, there are no high paying jobs in poor neighborhoods, nor are there good jobs near poor neighborhoods. The residents of these neighborhoods, then, are physically removed from mainstream society, making it increasingly challenging for them to improve their living circumstances. A cycle of poverty is perpetuated because of the segregation of socio-economic classes in society.

8 Discrimination also makes upward mobility very difficult. Systematic inequality in the United States has caused a disproportionately high number of ethnic minorities to be poor. Discrimination then adds another challenge for people who might be educated and talented but who belong to a visible minority. People who are not white are discriminated against when applying for jobs and when trying to buy a house. Therefore, not only is it difficult to get a job that would allow them to move into a wealthier neighborhood, but people also face difficulties because of their ethnicity.

1. What can be inferred from paragraph 2 about people in gated communities?

(A) They care about their appearance.
(B) They are materialistic.
(C) They are a diverse group.
(D) They are fearful of outsiders.

2. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) It is difficult to overcome the cultural differences created by class segregation.
(B) It is difficult to undo the damage caused by class distinctions to society.
(C) Class segregation encourages different cultural values to develop in different areas.
(D) Class segregation creates a lack of understanding between groups of people.

3. Why does the writer mention networking in paragraph 5?

(A) To give an example of an advantage that rich kids have over poor kids
(B) To give an example of a skill that can be learned to achieve success
(C) To show how poor people can use their skills to overcome their circumstances
(D) To show how good schooling prepares young people for the real world

4. According to the passage, which of the following was not mentioned as a difficulty faced by poor people when trying to achieve upward mobility?

(A) Lack of resources
(B) Lack of police protection
(C) Lack of opportunity to make social contacts
(D) Discrimination

5. Complete the table below to summarize the information about neighborhoods discussed in the passage. Match the appropriate statements to the one with which they are associated. Two of the statements will NOT be used.

Neighborhoods	Statements
Poor	**Select 3** • • •
Middle-class or Wealthy	**Select 2** • •

(A) Schools located on edge of neighborhood
(B) Large houses with large yards
(C) Dilapidated buildings
(D) A lot of wildlife
(E) High crime rates
(F) Schools lack resources
(G) High police-population ratio

UNIT 24

World Population Trends

1 Each day there are about 200 thousand more people in the world than there were the day before, which means that there are that many more births each day than there are deaths. The population of the world is growing at a rapid pace. It took millennia for the first billion people to inhabit the Earth as the world population didn't reach one billion until 1804, but it was just a little over 100 years later that another billion was added. The next billion only took 33 years as the Earth reached three billion in 1960, and it only took approximately 40 years to double that to total six billion.

2 Much of the increase in the rate of population growth can be explained by increased life expectancy. People are being born into the world faster than they are dying. For the first billion people to inhabit the Earth, surviving long enough to procreate was a feat because infant mortality was high, and not all children were expected to live to adulthood. But with improvements in agriculture, medicine, and in a number of other things, life expectancies increased drastically, and people were able to have more children and expect to see them grow up.

3 Societal events and economics can have a huge effect on populations. For example, the twentieth century saw dramatic economic fluctuations, which affected people's choices to have children. The first World War, for example, removed many men from American society, and so they and their wives and future wives had to delay childbirth. The Great Depression that ensued also decreased people's likelihood to have children simply because they could not afford to feed another mouth. World War II, again, separated young men and women, but this war was followed by economic growth, which encouraged many people to have several children. The 1950s and 1960s witnessed an enormous baby boom in the developed world.

4 In recent decades, fertility rates have dropped in developed countries. Even though people have the means to look after children, they are choosing to have fewer children or not have children at all. One reason is that women are more likely to get an education, which often means putting off childrearing until one has finished school or delaying even further in order to establish a career. Whereas women were once married shortly after they reached child-rearing age, more and more women are putting their careers first and postponing motherhood. The longer a woman waits to have children, the fewer she is likely to have. Therefore, there was a huge generation of people born in the 1950s and 1960s who did not have very many children of their own, and their children are having still fewer children. In most developed nations, fertility rates are below replacement levels, meaning that the next generation will not be as large as the preceding one.

5 However, population trends in the developed world do not give an accurate picture of what's happening to the world population. Eighty percent of people live in less developed countries and 95 percent of world population growth occurs there. While fertility rates are falling there too, they are still well above replacement levels. With most couples having more than two children and with life expectancies increasing, the planet is still expecting massive population increases over the next century.

6 Dropping fertility rates and increases in life expectancy lead to one inevitable outcome—the population is aging. The proportion of the population that is comprised of older people is growing and will continue to grow. This can be a worrying prospect for younger people because, for example, as the baby boomers retire, they become less productive players in the economy but continue to require resources. This puts a heavy burden on the younger generation who must look after them through health care programs and pension plans. But some argue that as life expectancy increases, so too does quality of life. There is no reason that retirees cannot remain productive. Indeed many retirees opt to get jobs in different fields just to keep busy, or they do volunteer work. Also, improvements in technology allow the younger generation to be more productive. As such, the aging population may not have the dramatic impact some are expecting because fewer people can get more done.

1. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) The year 1804 marked the first time the population doubled to total a world population of one billion.
(B) It took thousands of years to reach a population of one billion, but only about a century to double it.
(C) The birth rate increased drastically after the first millennium reaching a population of two billion in 1804.
(D) It took thousands of years to double the one billion person population the planet had in 1804.

2. According to paragraph 3, how did the wars impact people's decision to have children?

(A) They made them less likely to have kids because they were physically separated.
(B) They made them less likely to have kids because they could not afford it.
(C) They made them more likely to have kids because of economic prosperity.
(D) They made them more likely to have kids because of changing societal values.

3. What can be inferred from paragraph 4 about women?

(A) They prefer to work outside the home.
(B) They have gained more control over their lives in recent decades.
(C) They outperform men in both school and career-related endeavors.
(D) They are succumbing to social pressure to put career ahead of family.

4. Why does the writer mention developing countries?

(A) To emphasize the importance of slowing population growth
(B) To emphasize the imbalance that exists in the world economy
(C) To show they counter the affects of trends in developed countries
(D) To illustrate they have more influence on world population than developed countries

5. Complete the table below to summarize the information about countries and their populations discussed in the passage. Match the appropriate statements to the one with which they are associated. Two of the statements will NOT be used.

Countries	Statements
Developing Countries	**Select 2** • •
Developed Countries	**Select 3** • • •

(A) Most population growth
(B) Fertility rates below replacement level
(C) Reached a population of one billion in 1804
(D) Comprise most of world's population
(E) Improved status of women led to decreased fertility rates
(F) Later retirement resulting in fewer opportunities for younger generation
(G) Experienced a baby boom after World War II

UNIT 25 New Urbanism

1 The invention of the automobile changed the organization of our cities significantly. Before the car, people always walked, used horses, or rode in horse-drawn carriages for transport. The latter was not extremely convenient, though, so people walked whenever possible. As such, neighborhoods developed in such a way as to easily accommodate people's need to access a variety of goods and services within a rather short distance. A variety of shops and offices sprung up to meet the varying needs of neighborhood residents so that they would not have to travel lengthy distances from home on a daily basis. The invention of the car made it simple and convenient to regularly travel long distances and rendered the mixed-use neighborhood unnecessary.

2 After World War II, the expansion of the middle class and the popularity of the automobile led to the amazing development of the suburbs, which are residential districts surrounding the city. People could easily move outside of the city because they owned cars and could, therefore, commute to work in the city each day. Suburbs are characterized by large houses with big yards which take up a drastic amount of space. Life's amenities are accessible only by car, and sidewalks rarely exist because most people do not walk anywhere. Those who choose to exercise generally drive their cars to the nearest gym or to a nearby park. As more and more suburbs are developed, they consume the surrounding countryside, a process known as urban sprawl.

3 In recent years, a movement has formed as a backlash to urban sprawl. People are expressing concern about the increasing dependence on cars and its dangerous impact on the environment. Car exhaust majorly contributes to global warming, and the growth of suburbs infringes on natural forests. Some abhor the growth of suburban America for personal reasons; they prefer to walk places and to have closer knit communities. In response to these growing demands, a new movement in urban planning, called New Urbanism, has been initiated, and it seeks to restore mixed-use neighborhoods to reduce traffic and restrict urban sprawl.

4 New Urbanism rejects the entire concept of the suburbs. While suburbs are typically subdivided into neighborhoods of people belonging to the same demographic group, the mixed-use model promotes diversity by featuring a variety of jobs and a variety of housing types. Rather than each household possessing a large yard, as is typical in the suburbs, a shared open space is included, which allows for numerous people to live in a small area without feeling as if they are sacrificing green areas. The higher density allows people to walk from their homes to school, to work, to the shopping area, or to entertainment venues, which massively reduces the need for cars. Ideally, all of these locales are within a ten-minute walk from people's homes and places of work. The intense focus on walking demands that streets be pedestrian-friendly; that is, they must have sidewalks. Bike paths are also included to encourage cycling.

5 Mixed-use neighborhoods are characterized by a discernible center, which may be a park or a busy market place where people can meet. It should also be the location of a transit stop, be it a bus stop or a subway station to encourage mass transit use when traveling longer distances. The whole area should also be aesthetically pleasing so as to encourage people to get out and walk or enjoy the open, green area.

6 It is thought that mixed-use neighborhoods are not only more environmentally friendly, but also improve the quality of life of the people living there. For example, people living in the suburbs spend a significant portion of their days sitting in traffic—time that could be spent with family or doing cultural activities or simply relaxing. When people do not have to commute to work, they have more time to enjoy life. Mixed-use neighborhoods offer advantages to businesses, too, as a lot of customers will wander into stores when they are passing by, even if they were not planning to go there. This is less likely to occur when people are in their cars and have to find a place to park. Additionally, people have more money to spend on impulse purchases because they are spending less on gasoline for their cars.

1. In paragraph 3, which of the following was not mentioned as a goal of mixed-use communities?

(A) Keeping housing costs low
(B) Reducing urban sprawl
(C) Reducing traffic
(D) Improving quality of life

2. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) Suburbs are divided into economically distinct neighborhoods while mixed-use neighborhoods are divided according to employment or housing types.
(B) Suburbs can be more diverse than mixed-use neighborhoods because residence choices are not tied to job locations.
(C) Mixed-use neighborhoods can be more diverse than suburbs because they offer an array of housing choices for different-sized families.
(D) While suburban neighborhoods are homogenous, mixed-use neighborhoods should be heterogeneous because of the array of employment and housing available.

3. What can be inferred from paragraph 6 about life in mixed-use neighborhoods?

(A) It is less convenient because of the ban on cars.
(B) While income is diminished, leisure time increases.
(C) There is more interaction among the people living there.
(D) The crowded housing diminishes quality of life.

4. Why does the writer mention that mixed-use neighborhoods offer advantages to businesses in paragraph 8?

(A) To stress the importance of mixed-use neighborhoods to the economy
(B) To support the argument that mixed-use neighborhoods are optimal
(C) To demonstrate an important concept in mixed-use neighborhood design
(D) To show that commercial interests are more important than residential interests

5. Complete the table below to summarize the information about neighborhoods discussed in the passage. Match the appropriate statements to the one with which they are associated. Two of the statements will NOT be used.

Neighborhoods	Statements
Mixed-use Neighborhoods	**Select 3** • • •
Suburbs	**Select 2** • •

(A) Cause of urban sprawl
(B) Promote diversity
(C) Make amenities accessible
(D) Encourage walking and cycling
(E) Commercial interests more important than residential
(F) Protect natural habitats of animals and plants
(G) Residents spend a lot of time traveling in cars

UNIT 26 Pre-natal Development, Birth, and Infancy

1 The fertilization of an egg by a sperm initiates a series of amazing events that can ultimately lead to a new life. Human prenatal development is divided into three distinct stages—the first, second, and third trimesters. Birth, of course, constitutes the end of the prenatal phase and the beginning of an existence independent of the mother; however, this new life continues to rely heavily on its mother for survival during infancy.

2 The unique single-celled organism created by the union of sperm and egg is called a zygote. The single-celled zygote divides into two cells, and those cells then divide into four cells and so on until they form a tiny ball of cells called a morula. Meanwhile, as the cells continue multiplying, the tiny mass traverses down the fallopian tube towards the uterus, and after further multiplying of cells, a group of cells forms outside of the inner group of cells. The inner group will eventually become a fetus, and the outer group of cells is formed to provide protection and nourishment to the inner group and will become the placenta and amniotic sac. The new mass is called a blastocyte, and it implants itself into the lining of the uterus, which is called the endometrium and provides nourishment to the blastocyte. The entire process to this point requires seven to nine days.

3 Soon after, the cells are managing more than multiplying; they are actually specializing to perform certain functions. This specialization occurs during the embryonic stage when the skeleton, organs, and all basic structures of the body develop. For this reason, it is an extremely important trimester because if the mother's body is malnourished or absorbs toxins, it can adversely affect the normal development of the embryo. For example, if the mother ingests certain toxins during the formation of the vertebrae in week four or five, serious spinal problems might ensue. Once all of the organs and the basic structure are intact at about the eighth week after conception, the embryo becomes a fetus. Its head is almost half of its full size, and the gender is evident; that is, its genitalia have been formed.

4 The fetus begins the second trimester at sixteen weeks with an incredibly thin layer of skin that now starts to grow a bit of hair. Although its heart had been beating since about its fourth week, it is now a strong enough heartbeat that its parents can hear it via use of a stethoscope. The fetus starts to actively move around a great deal in the womb and these movements can often be felt by the mother. The third trimester involves rapid brain development as the baby begins to prepare for life as an independent organism. The fetus is deemed a baby now because if, for some reason, it should be born early, it has a fairly strong chance of survival. Once it reaches a size where it completely fills the uterus and its shoulders are as wide as its head, it is ready to be born.

5 Childbirth is perhaps the most physically painful experience a woman will endure in her life. It starts with contractions of the uterus that help the cervix dilate, which is a gradual process that could take many hour; in general, the contractions become more painful and more frequent as the mother approaches labor. The rupturing of the amniotic sac commences the transition phase during which contractions become extremely intense and the cervix finishes dilating; that is, it reaches a diameter of about ten centimeters. If everything is running smoothly, the baby is ready for a head-first delivery. Eventually, the baby is born, the umbilical cord is cut, and the baby starts breathing on its own.

6 The baby is now physiologically independent but will continue to require a great deal of care, particularly during its first year of life while it cannot walk or talk. In fact, the word infant comes from the Latin in-fans which means unable to speak. A baby's first year is spent with complete reliance on the caregiver for food, water, shelter, and mobility.

1. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) Birth is a prenatal phase that signifies an independent existence for the mother who is still required to care for her baby.
(B) Birth is the event that brings forth a new life which needs a mother to nurture it.
(C) Birth establishes baby and mother as separate beings, but the baby still needs someone to care for it if it is to survive.
(D) Birth is a drastic change for the baby as it goes from being reliant on its mother to being self-reliant within a few hours.

2. According to paragraph 3, which of the following was not mentioned as an occurrence of the first trimester?

(A) The placenta and amniotic sac are formed.
(B) The embryo is particularly sensitive to toxins.
(C) The gender is determined.
(D) The growth is rapid.

3. What can be inferred from paragraph 5 about delivery?

(A) Complications will arise if the baby is coming out head first.
(B) Complications will arise if the baby is coming out rear-end first.
(C) Babies should not be born head first.
(D) Babies can only be born head first.

4. Why does the writer mention the Latin origin of the word infant in paragraph 6?

(A) To emphasize the limited abilities of infants
(B) To give background information on the concept of infancy
(C) To imply that infancy is over when the baby starts speaking
(D) To illustrate the importance of communication

5. Complete the table below to summarize the information about trimesters discussed in the passage. Match the appropriate statements to the one with which they are associated. Two of the statements will NOT be used.

Trimesters	Statements
First Trimester	**Select 2** • •
Second Trimester	**Select 3** • • •

(A) Skeleton and organs develop
(B) Hair grows on thin layer of skin
(C) Heartbeat becomes audible
(D) Genitalia form
(E) Movements felt by mother
(F) Rapid growth
(G) Born head first

UNIT 27

Childhood

1 Infancy is generally considered over after about a year of life when the child becomes somewhat mobile and communicative. Infants are now toddlers, and their primary task for the next few years will be to develop a sense of self. Children will gradually develop motor skills that will help them to be more self-reliant. First, they start walking, and this new mobility coincides with a heightened awareness and curiosity of the world and its surroundings. In time, children will be able to eat and dress on their own and learn to control bladder and bowel functions and, as such, use the toilet. Toddlers will learn language, which can be used to communicate with family members and with others, first using one-word sentences such as "down" to mean "I want to get down," and gradually learning to create full sentences. Toddlers will also learn to express a variety of emotions. At this point in development, toddlers are testing the world around them and may become easily angered or throw temper tantrums. This is an expression of independence, though that does not mean that parents should give in to these tantrums. Indeed, children need to be able to trust the parent as the authority figure, and the way for parents to instill this trust is through consistency. However, by being too disdainful of the tantrum, parents may inadvertently discourage the sense of autonomy, so a firm and consistent response is always optimal.

2 At around the age of three, a child ceases to be a toddler, and early childhood begins. The sense of self should be well established, and toddlers now start to use their imagination a great deal through the invention of imaginary friends or enjoyment of role-play activities. Toddlers are also starting to notice behavioral difference between males and females and may start imitating adults by, for example, putting on makeup or pretending to mow the lawn. Play becomes increasingly creative, and children will enjoy finger painting, drawing, or making things out of play dough. An awareness of cause-and-effect relationships is increased, and children become very inquisitive, constantly bombarding parents and other elders with questions about the world and how it works. They also develop a strong vocabulary. The main goals of early childhood are to learn the distinction between reality and fiction and to develop problem-solving skills. Attachment to the child's mother eases, and children become more interested in socializing with peers.

3 The school years, of course, involve the development of educational and social skills. Children, now approximately five years old, enter middle childhood with an increased attention span and an amazing ability to concentrate on a multitude of tasks. The incredible development of fine motor skills allows them to start printing, drawing, and using scissors. They are quickly capable of printing their name, drawing the basic human form, and cutting paper to create a snowflake, for example. Outside the classroom, gross motor skills are constantly developing as they enjoy running, jumping, and climbing. Children also enjoy doing puzzles and other activities that allow them to exercise their problem-solving skills. By now, language skills are becoming quite refined, and children are making grammatically-correct sentences that can be easily understood by people outside of the family. Relationships with peers are becoming increasingly important as children are gaining independence from their parents. Children enjoy playing cooperatively with friends and become less concerned with themselves and their own needs and wants and more concerned with those of other people. In other words, the ability to empathize is being developed.

4 By the time children reach the age of nine, they become more independent, and friendships are extremely important. Basic skills like reading, writing, counting, and math are essentially mastered. Children have moved forward, and their thinking skills have evolved. They can think in increasingly complex ways such as using logic and reasoning to approach problems and consider various aspects of a problem and its solutions. However, they are still more comfortable with concrete things than with abstract ideas. Physically, they are extremely coordinated and can complete such physical tasks as riding a bike and hitting a baseball. By the age of ten or eleven, children are ready to enter the fascinating transition between childhood and adulthood: adolescence.

1. What can be inferred from paragraph 1 about about temper tantrums?
   (A) They are a natural part of a child's development.
   (B) They are the result of spoiling a child.
   (C) They should be encouraged by parents.
   (D) They should be punished by parents.

2. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.
   (A) The child is more cooperative and less selfish.
   (B) The child prefers cooperative tasks to self-directed ones.
   (C) The child is preoccupied with what other think.
   (D) The child plays in a friendly manner and does not mind sharing.

3. According to the passage, which of the following is not mentioned as a goal of childhood development?
   (A) Developing a sense of self
   (B) Distinguishing between reality and fiction
   (C) Developing skills to get what is wanted
   (D) Developing problem-solving skills

4. Why does the writer mention that children are still more comfortable with concrete things than with abstract ideas in paragraph 4?
   (A) To show that imagination is the last skill to develop
   (B) To indicate that the child is ready to move out of a comfort zone
   (C) To illustrate the main goal of middle childhood
   (D) To emphasize that cognitive skills are not yet fully developed

5. Complete the table below to summarize the information about childhood discussed in the passage. Match the appropriate statements to the stages with which they are associated. Two of the statements will NOT be used.

Stages	Statements
Toddler	**Select 3** • • •
Early Childhood	**Select 2** • •

   (A) Ability to concentrate increases
   (B) Becomes more imaginative
   (C) Learns to walk
   (D) Speaks in one-word sentences
   (E) Cannot yet walk or talk
   (F) Asks a lot of questions
   (G) Throws temper tantrums

UNIT 28

Puberty

1 The body goes through a series of changes as it transforms from that of a child to that of an adult. The functional difference between a child's body and an adult's body is that adults can reproduce, and puberty is the process by which the body becomes a procreating entity. The drastic physical changes and the social and psychological implications of becoming an adult can be quite tumultuous for young people as they come to terms with their individual identity.

2 The release of hormones from the pituitary glands signals the body to grow and to start changing in preparation for procreation. Both boys and girls will experience a growth spurt, though the pattern is different as girls have an early, quick growth spurt, while boys initiate their growth spurts later and they last a longer time. Both boys and girls obviously gain weight during this time, but for boys it is mainly from muscle whereas for females it is mainly from fat. Growth spurts tend to occur unevenly; that is, limbs will grow at a disproportionate rate to the body and so teens tend to be clumsy and uncoordinated during puberty.

3 The development of secondary sex characteristics is perhaps the most pronounced change during puberty. For girls it begins with the development of breasts and the growth of hair in the pubic region. The hips gradually widen in preparation for childbirth, and the ovaries begin releasing eggs, causing the girl to begin having menstrual periods. Boys hit puberty slightly later than their female counterparts, and the first noticeable sign is an increase in the size of the testicles. Testicles produce sperm and a hormone called testosterone. The increase in testosterone production that accompanies the growth of the testicles signals changes in the rest of the body. The penis increases in size and while the boys were always capable of having erections, they become more frequent, and they can now ejaculate. Soon hair begins to grow on and around the genitals, and later, body and facial hair will appear. Their voices will get lower, but not before going through an awkward period where they are hard to control.

4 The timing of puberty in both boys and girls can be very important to their emotional well-being. It is very important for adolescents to fit in with their friends, and if they are maturing at a different rate, it can make them feel awkward. This is true if they begin puberty earlier than their peers, or if they start later. It seems, however, that early and late onset of puberty affects boys and girls differently. Boys who mature early tend to be admired by peers and easily take on leadership roles. However, adults may mistakenly expect physical maturity to be a sign of emotional and cognitive maturity, and as such they expect more of them. Girls who show signs of puberty early on may be pressured into entering into sexual relations with older boys sooner than they are ready. It seems that girls who hit puberty earlier than their peers have more instances of depression, anxiety, and eating disorders.

5 The development of an adult body is not the only change adolescents are experiencing. They are also developing adult thinking skills, which include reasoning and abstract thinking skills. By now, they are able to consider multiple variables and contemplate hypothetical situations. These are important skills when establishing identity, which involves getting a clear sense of one's values and beliefs, and determining one's goals and ambitions for the future. Through decision making, problem solving, and reasoning, adolescents become independent people, who make their own decisions and forge their own relationships. They are now responsible for their decisions, and they establish their own moral code based on introspection as opposed to abiding by the rules prescribed to them by their parents. All of these fascinating psycho-social changes result in additional changes in the behavior of adolescents. As forging intimate friendships—both platonic and sexual—becomes important, teens typically spend less time with their families and more with their friends. Privacy becomes very important to some, and they may start locking their bedroom door or writing in a private journal to help them sort out their thoughts and feelings. Some become argumentative or rebellious, but that is just part of establishing autonomous values and principles.

1. According to paragraph 2, which of the following is true for both males and females?

(A) Hormones are released from the pituitary gland.
(B) Growth spurts start early and last a long time.
(C) Weight gain is due primarily to increases in muscle mass.
(D) Growth is proportionate causing clumsiness.

2. Why does the writer mention the timing of puberty in paragraph 4?

(A) To show how mature students tend to be at a disadvantage over average students
(B) To introduce the topic of non-physical changes encountered during puberty
(C) To illustrate how changes in diet have influenced growth rates over time
(D) To show the impact of pop culture on youths as it causes younger puberty onset

3. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) They now obey their own code of conduct over the one their parents imposed on them.
(B) They now behave in a responsible manner in accordance with the values their parents have instilled in them.
(C) They take responsibility for their actions and think about what they have done when they upset their parents.
(D) They reject the teachings of their parents and design their own code for living.

4. What can be inferred from paragraph 5 about teenage rebellion?

(A) All teenagers engage in harmless rebellion.
(B) It can be used as a tool in establishing autonomy.
(C) It is a dangerous avenue for adolescents to take.
(D) It can interfere with the normal development of teens.

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

Puberty marks the transition from childhood to adulthood.

(A) The body grows and becomes capable of procreation.
(B) Because of disproportionate growth, many teens become clumsy.
(C) Not going through puberty at the same time as one's friends can cause emotional distress.
(D) Parents should try to help their teens to understand what is happening to their bodies.
(E) Teens also develop adult thinking skills and establish their own moral code and identity.
(F) Privacy becomes increasingly important for adolescents as they try to sort out their emotions.

UNIT 29

Kindergarten

1 The transition from home to school can be extremely trying for young children. At home, children share their parents' attention with few, if any, siblings. Play is generally not particularly structured, and children typically have ample opportunity to play as they choose. The classroom, on the other hand, can consist of more than a dozen other children competing for attention from the teacher, who is the solitary adult in the room. These children must remain seated for most of the day, and their activities are highly structured and carefully guided by the teacher. This can be a very drastic change from everything to which they had become accustomed. To aid children in making a smoother transition from home to school, they attend a program called kindergarten which eases them into the world of school at the age of four, five, or six, depending on the state or country.

2 Kindergarten is German for child's garden. It was conceived as a blatant rejection of the terribly rigid educational styles that existed in the nineteenth century. It is designed to accommodate the learner who is active and playful rather than demanding that the learner alter behavior to adapt to the structured nature of the harsh educational system. Today it is seen as an opportunity for children to learn the social skills they will need to enter the school system where they will be in a class with other children for significant portions of their days. Kindergarten presents small children with a rather fun environment, which aims to ease the anxiety that may accompany the separation from parents for lengthy durations of time. Children learn to communicate and interact with other people their own age and have fun doing so.

3 The traditional classroom, with strict rows of desks and a traditional blackboard at the front, is not appropriate for young children. Therefore, kindergarten classrooms are designed to enhance learning by providing plenty of visual stimuli and ample space for movement. In addition to an area for active play, there should be an area for quiet activities such as reading or drawing. All materials that the child will require for arts and crafts and other such activities should remain easily accessible, and an area will typically be designated to display artwork. The room should be extremely colorful and provide a plethora of opportunities for learning.

4 Much of the kindergarten curriculum focuses on language skills as language skills are fundamental to every aspect of academia. Necessary speaking and listening skills are developed via a multitude of activities that involve spontaneous and imaginative conversation, creative story telling, and simple questioning and responding. Nursery rhymes and chipper songs help children experiment with rhythm and rhyme, as well as identifying different sounds. Reading and writing skills are initiated by learning the alphabet and doing appropriate exercises to help recognize print. In time, children recognize high frequency words in print by first making an association with pictures and later by recognizing the print itself.

5 Children are also exposed to academic arenas in a fun and engaging way. Children learn through play and through hands-on exercises. Science, math, language, art, music, health, movement, and social studies are all taught in an integrated manner that keeps these principles in mind. In math, for example, children become skilled at counting, identifying shapes, sorting things into groups, and understanding patterns. The goal is to give children a strong foundation in the subject areas that they will delve further into in later years while instilling an intrinsic interest in learning. These are important objectives because children will not only be well prepared for further study, they will have developed a love of learning that will serve them well in the years to come.

6 The ability to succeed in an academic environment is also fostered. Children have opportunities to learn how to resolve conflicts with other children and are encouraged to respect others. They learn how to develop friendships and how to behave in an appropriate manner. Following rules and doing things within a certain time frame are hugely important for children to learn if they are going to do well in school and in life. Kindergarten provides the foundations for all of the skills that children will need to succeed in school.

1. Why does the writer mention children's siblings in paragraph 1?

(A) To show how only-children have trouble adapting to a classroom setting
(B) To contrast home and school environments
(C) To suggest that home environments are unnatural
(D) To imply that home-schooled children have an advantage

3. What can be inferred about children's education in the nineteenth century from paragraph 2?

(A) It was more challenging for teachers of young children.
(B) It was provided unequally among the social classes.
(C) Its strict academic focus gave children a better start in the world of school.
(D) It did not foster emotional growth in children.

3. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) Children in the past never got a chance to learn social skills, but now they do.
(B) Today, children get to play with other children all day long.
(C) Kindergarten is viewed as a chance for kids to learn the social skills necessary for school life.
(D) The focus on social skills takes away from academic study these days.

4. According to paragraph 3, which of the following is not an essential part of an ideal kindergarten classroom?

(A) A blackboard
(B) Space for movement
(C) An area for reading or drawing
(D) An artwork display

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

Kindergarten marks the transition from home to school for young kids.

(A) Children learn social skills in addition to basic language skills and rudimentary academic skills.
(B) It is more fun than being at home all day because there are more kids to play with.
(C) It is difficult for young children to sit still all day, so they should be given the chance to run around and play.
(D) A fun and interactive approach is taken because that is how young children learn best.
(E) Kindergarten prepares children for school life by teaching them what will be expected of them.
(F) Kindergarten is seen as the bridge between childhood and adolescence.

UNIT 30 Primary School

[1] Primary education prepares children for higher educational achievement by providing the foundations of learning. In elementary school, which usually includes first through fifth or sixth grade in the United States, students gain basic literacy and math skills. They are also exposed to the essential principles of the sciences and the social sciences. In addition to the academic knowledge they attain, students acquire the amazing ability to learn, and they enhance their understanding of the world.

[2] During elementary school, students are typically grouped into classes according to age. Each class is assigned one teacher who is ultimately responsible for teaching the majority of the detailed curriculum. The students spend a majority of the day in a single classroom. Certain, specialized subjects such as music, foreign language, and physical education are taught in different rooms by different teachers who have specialized knowledge of those particular subjects. There are some educational leaders in the United States and Canada that are trying to change this basic format in recognition that it is an unnatural learning environment and children would do well to actively interact with children of other ages. Indeed, the traditional schoolhouse featured one teacher responsible for all children from kindergarten through twelfth grade. This was when populations were much smaller, transportation was not as efficient, and fewer children attended school.

[3] In addition to academic knowledge, skills, and understanding, children also develop social skills and a work ethic. Through classroom learning, they improve their attention span and ability to concentrate. They learn to complete tasks in a given amount of time and come to understand that school work is a priority. These are important life skills that children must learn if they are to function well in secondary school, post-secondary school, and in the world of work.

[4] Students' natural inclination to inquire about the world and how it works should be fostered during this time. Children do not need to learn to be curious as curiosity is a natural childhood trait. As such, children should be given every opportunity to ask questions not only of the teacher but also of each other. Classmates are also a source of learning, and as such, the teacher should provide ample opportunity for paired work and group work. This gives them a chance to learn cooperation and team work, as well as promoting mutual respect among students.

[5] A good primary curriculum recognizes that different children have different learning styles. Some children are hands-on learners, some are visual learners, and some are auditory learners. Indeed some people have one learning style in certain subjects and another learning style in others. As such, teachers use a variety of teaching methods to ensure that all children get adequate instruction in their preferred style, but also that they adjust to the other methods. If personal learning style is catered to excessively, the students will have trouble in the real world, where things are not custom designed specifically for them. Therefore, adaptation is another skill that is fostered in elementary school.

[6] Technology is becoming increasingly important in elementary school as young people are particularly adept at learning to use new technologies. Not all children have access to computers and other devices at home, so schools can provide those children with the opportunity to learn the same skills that their more wealthy counterparts might be learning at home. Digital literacy is becoming increasingly important on the world stage, and early exposure gives children a great advantage. However, high-tech classrooms cost a lot of money. Thus, schools that are under funded are at a serious disadvantage. This gives rise to what some are calling the digital gap. Children who go to well-funded schools gain an advantage over children who go to under-funded schools because of their access to computer technology.

[7] By the time students finish elementary school, they are ready to move on to middle school. They have hopefully developed all of the basic academic skills that they will need to succeed in their educational pursuits. Moreover, they should have developed social skills and the ability to adapt to varying circumstances. While they will continue to develop these skills for the rest of their lives, the foundations for all of their life and academic skills were established in elementary school.

1. What can be inferred from paragraph 2 about the alternative schools mentioned?

(A) They are based on the model of one-room schoolhouses.
(B) They are more effective than traditional schools.
(C) They group students according to age.
(D) They are characterized by multi-aged classrooms.

2. According to paragraph 3, which of the following is not part of elementary school education?

(A) Academic knowledge
(B) Hand-eye coordination
(C) Academic skills
(D) Social skills

3. Why does the writer mention learning styles in paragraph 5?

(A) To show why some students do not fare well in elementary school
(B) To suggest that children should be grouped according to learning style
(C) To demonstrate one way that children learn adaptation skills
(D) To give an example of one of the failings of the public school system

4. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) Some children learn new technologies easily even though they do not have access at home.
(B) Some children are at a disadvantage compared to wealthy kids because they do not have computers at home.
(C) Schools can provide children of different social classes the opportunity to get to know one another.
(D) Schools can expose underprivileged children to the technology that wealthy kids have at home.

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

Elementary school provides the basic skills and knowledge for all future endeavors.

(A) A single teacher is responsible for all aspects of the curriculum.
(B) Music, foreign languages, and gym are just as important as core subjects.
(C) General knowledge and study skills are developed at this stage.
(D) Most students prefer to be in a class with other students their own age.
(E) Different learning styles are accommodated with a variety of teaching methods.
(F) Technology is introduced while children are particularly good at learning it.

UNIT 31

Educating Teens

1 Children's education involves more than simply teaching academic skills and imparting knowledge. During the school years, children are weaned from their dependence on grown-ups and gradually taught how to transition into independent adulthood. Before beginning school, children have a primary caregiver who is the center of their world. When they start kindergarten, another adult, the teacher, becomes significant as well. Meanwhile, children receive the opportunity to interact with others their own age. Throughout elementary school, their friends become increasingly important, and by approximately sixth or seventh grade, they reach adolescence, which means that they begin the transition between childhood and adulthood. This transition often extends several years. During this time, their educational and emotional needs are distinct from those of children. In recognition of their diverse changing needs, a shift in the focus of their education is required to prepare young people for adulthood.

2 Younger teenagers have different needs from older teenagers, and so one approach is taken to educate early teens and another is adopted to educate older teens. Depending on their unique region, younger teens perhaps attend a middle school, or they might enter a junior high school, after elementary school. These schools generally include sixth grade through eighth grade or seventh grade through ninth grade. Junior high schools and middle schools differ in their philosophies towards education and in their formats and structures. If we consider the middle school philosophy as being at one end of the spectrum, and junior high schools as being at the other end, we see that most schools for young teens fall somewhere in the middle. Moreover, some schools call themselves middle schools when they actually run similarly to junior highs, and some schools that are akin to middle schools have junior high in the name.

3 Junior high school, in theory, is basically a primer to high school, whereas middle schools are especially tailored to the unique needs of young teens. While junior high schools focus mainly on academic achievement and cognitive development, middle schools acknowledge the utter importance of emotional development at this special age. Students receive tailored guidance in the transition from elementary to high school. They are educated about the fascinating changes that they are traversing through, and they gain knowledge about the tough decision-making process which is becoming increasingly important in their youthful lives. The basic structure of the middle school involves teams of teachers working together to guide students instead of individual teachers concerning themselves only with their particular subject. As such, subject matter is integrated and students are exposed to a variety of learning tools. Students are encouraged to work together on tasks rather than competing with each other for recognition. In effect, the environment of the middle school is one that fosters emotional growth and allows students to mature. Junior high schools tend to neglect the emotional needs of students while focusing on academic achievement. Again, most schools for adolescents do not fit either definition perfectly.

4 By the time students reach the ninth or tenth grade, they are relatively independent and self-motivated. They will soon be entering the adult world of university or industry; indeed, many students may already be working at part-time jobs to earn extra cash. They are thinking about their future and making plans for their career initiation. High school gives students the chance to take those tenuous, preliminary steps towards career planning by choosing which courses they study. They must balance required courses with elective courses they would like to pursue, and counselors provide both academic and emotional guidance. Students are quite independent by now and do not need to be part of a homeroom class. Rather, each class that the student attends is made up of different students and, as such, students are exposed to a lot of different people and a wide subject matter. In many countries, students begin their career track in high school; taking classes that will prepare them for certain jobs or careers. Career paths are determined both by aptitude testing and individual student interest. In the United States, however, high school students receive a broad education and are exposed to a variety of subjects. Academic goals for high school include giving students an overall command of general knowledge and preparing them for either further study in university or for achieving success in the working world.

1. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) If middle school were looked at as a philosophy, junior high school would be considered its antithesis.
(B) Most schools for young teens fall in the middle of a spectrum with middle school on one end and junior high school on the other end.
(C) Middle schools are philosophical in nature whereas junior high schools are practical in nature.
(D) On the spectrum of educational philosophies, middle school falls at one end and junior high school fall at the other end.

2. According to paragraph 3, which of the following was not mentioned as a characteristic of middle schools?

(A) Middle schools foster emotional growth.
(B) Teachers form teams and work together.
(C) Academic performance is central.
(D) Decision-making skills are developed.

3. What can be inferred from paragraph 3 about students who attend junior high schools?

(A) They are more emotionally mature than middle school students.
(B) They are more academically prepared for high school than middle school students.
(C) They are not as well-prepared academically as middle school students.
(D) They are not as well prepared for high school as middle school students.

4. Why does the writer mention that by the time students reach the ninth or tenth grade they are relatively independent and self-motivated in paragraph 4?

(A) To show why students are ready for a change in the approach to their education
(B) To imply that middle schools treat students like babies
(C) To explain why some students succeed in middle school and why some do not
(D) To give an example of how middle school prepares students for high school

5. Complete the table below to summarize the information about schools discussed in the passage. Match the appropriate statements to the one with which they are associated. Two of the statements will NOT be used.

Schools	Statements
Middle School	**Select 2** • •
High School	**Select 3** • • •

(A) Students choose which courses to study.
(B) Teachers join parents as important adult figures.
(C) Each class is made up of a different group of students.
(D) Integrated study is essential.
(E) Competition is minimized and cooperation encouraged.
(F) Students are expected to take on a part-time job.
(G) Students attain a command of general knowledge.

UNIT 32

College and University

[1] Upon graduation from high school, young people have several options. They are now adults and are responsible for themselves, and as such, they need to earn a living. However, a high school diploma does not guarantee young people the kind of job that will earn them decent wages. Indeed, most jobs that do not require post-secondary education of some sort pay only minimum wage and offer few, if any, benefits. As such, many young people choose to pursue further educational opportunities in order to secure a higher-paying job.

[2] Post-secondary education is not provided by the state in the United States and can be exceedingly expensive. The government may subsidize these institutions somewhat, but students are generally required to pay a significant amount of money for tuition, books, housing, and other living expenses. Because they are studying, it is difficult for students to work full-time to cover these costs. The cost of university can be a major burden, but it is also an investment because it increases people's earning power in the long run. Young people who do not receive financial support from their parents have several options. Some students receive scholarships based on achievement or on need. If they earn very high grades, they may be awarded a scholarship to pay for all or part of their tuition and expenses. Scholarships are also offered to attract extraordinary athletes. In order to play on varsity teams, athletes must also be students, and so some universities in the United States pay for their studies so that they can play on their teams.

[3] Both academic and athletic scholarships are referred to as merit-based scholarships because students earn them through outstanding achievements in academia or athletics. Need-based scholarships are available to students with low socio-economic status. In order to encourage the less fortunate youth to pursue the education they need to improve their lots in life, scholarships are available to help make university study a feasible option. Students who do not qualify for scholarships must determine another way to fund their education. The most feasible solution for most is to take out a student loan. These are loans from banks that they will have to pay back once they are finished school and earning a living, which should be more lucrative than the one they would have had if they did not earn a degree.

[4] University studies are divided into undergraduate and post-graduate studies. Undergraduate programs culminate in the issuance of a Bachelor's degree and are usually either three or four years in length, though three-year programs are rapidly becoming less common. Generally, students entering university programs decide whether they will pursue the sciences or the arts. The faculty of science sets firm requirements for attaining a Bachelor of Science, and the faculty of arts determines what is strictly required for completion of a Bachelor of Arts. The faculty of arts includes all of the liberal arts such as history, literature, and political science. Fine arts such as painting and theater are often offered through the faculty of arts but are also offered at specialized colleges. Both science and art faculties require students to choose a major, generally in their second year of study. Their major is the subject that they will focus on. Some subjects, such as psychology, can be approached as a science or as a liberal art and as such are offered through both faculties. In other words, students can earn a Bachelor of Science with a major in psychology or they can earn a Bachelor of Arts with a major in psychology.

[5] When students earn their Bachelor's degrees, they may pursue two main options—they can search for a job, or they can continue studying. Students who choose to continue schooling in a post-graduate program generally have a strong passion for their subject and a love of academia. After attaining a Bachelor's degree, students can proceed further to earn a Master's degree, and the next level is the doctorate, or Ph.D. Students who earn a Ph.D. have not only studied their subjects in tremendous detail, but have also significantly contributed to their field. They have completed research, published their findings, and likely taught undergraduate classes in university settings. People with Ph.D.s generally work in academia for the duration of their careers, dividing their time between research and teaching.

1. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) While the government pays for tuition, students still have to pay for living expenses.
(B) Government subsidies are not increasing as quickly as the cost of education.
(C) Regardless of government help, students are largely responsible for themselves.
(D) Despite government subsidies, the cost of studying at university is substantial.

2. What can be inferred from paragraph 2 about some university athletes?

(A) Some choose their university based on how much money is offered to them.
(B) Some prioritize their school work but use sports as a mean of paying for university.
(C) Some receive special privileges from professors.
(D) Some make a career out of their sport.

3. According to the passage, which of the following people would not qualify for a merit-based scholarship?

(A) A student who earned straight As in high school
(B) A student who earned Bs and Cs in high school and plays football well
(C) A student who earned Bs and Cs in high school and comes from a poor family
(D) A student who earned straight As in high school and plays basketball well

4. Why does the writer mention fine arts in paragraph 4?

(A) To prevent some possible confusion regarding the term art
(B) To give an example of a subject taught within the faculty of arts
(C) To demonstrate a skill that can be developed at university
(D) To contrast a university program with a trade school program

5. Complete the table below to summarize the information about university programs discussed in the passage. Match the appropriate statements to the one with which they are associated. Two of the statements will NOT be used.

University Programs	Statements
Undergraduate	**Select 2** • •
Postgraduate	**Select 3** • • •

(A) Students can first earn a Master's degree and then a Ph.D.
(B) Admission is based on athletic prowess.
(C) Students earn a Bachelor's degree upon completion.
(D) Students' research findings are published in journals.
(E) Students gain teaching experience and often remain in an academic setting.
(F) Sophomores choose a major on which to focus.
(G) Guidance in post-graduation job search is offered.

SECTION 3

Physics

PART A | Energy and Forces

unit 33 Gravity
unit 34 Planetary Orbits
unit 35 Newton's Laws of Motion
unit 36 Thermodynamics

PART B | Electricity and Magnetism

unit 37 Benjamin Franklin
unit 38 Electrical Generation
unit 39 The Principles of Magnetism
unit 40 The Compass

PART C | Light and Optics

unit 41 Light and Color
unit 42 Particle or Wave?

PART D | Particle Physics

unit 43 Splitting the Atom
unit 44 Nuclear Energy

PART E | Astronomy

unit 45 The Solar System
unit 46 Comets and Meteors
unit 47 The Constellations
unit 48 The Hubble Telescope

UNIT 33

Gravity

1 It seems almost unthinkable to twenty-first century inhabitants of the information age, but the concept of gravity was only articulated and fully understood after leaps of inspiration over the past 500 years. Yet as the world is observed, people are struck by the ubiquity of gravity's evidence. Everything is naturally pulled to the Earth and only succeeds in moving away from it via considerable force. Today, people may wonder how ancient people could have observed the same things and yet not know that smaller bodies, like people and stones, naturally fall toward larger bodies, like the Earth.

2 The idea is not actually so novel; in fact, it dates as far back as 2,500 years. The ancient Greek world view incorporated something along the lines of a beginning concept of gravity. Building on their idea of four basic elements—earth, fire, air, and water—they postulated that earth was the heaviest of these elements, and therefore everything else was required to fall toward it. The ancient Greek philosopher, Aristotle, even claimed that bodies fell toward the Earth in proportion to their weight. While fundamentally flawed, this framework was at least a step in the right direction; it approached the phenomenon of falling as a law with a natural explanation. Unfortunately, this would constitute the furthest extent of humankind's progress on gravity for the next 2,000 years.

3 The modern formulation of gravity began with the Italian astronomer, Galileo Galilei. Around the turn of the seventeenth century, he conducted two experiments of great historical significance. The first, which is somewhat shrouded in legend and may never have actually occurred, is when he dropped two balls off the Tower of Pisa (now famed for leaning). The second, generally regarded as actually having been conducted, involved rolling two balls down different slopes and measuring their speed and acceleration. These experiments demonstrated that gravity accelerates all objects at the same rate: $9.8\ m/s^2$. This contradicted Aristotle's theory, which hypothesized that heavier objects accelerated faster. Of course, heavier objects often appear to fall faster, but, as we now know, this is due to air resistance. A heavier object can push through air faster than a lighter object. In a vacuum, a feather and a coin will fall at the same rate.

4 So, Galileo had proven a crucial underlying property of gravity. This set the stage for an overall formulation of its precise workings. This formulation came in the form of Isaac Newton's 1687 publication of *Philosophiae Naturalis Principia Mathematica* (Mathematical Principles of Natural Philosophy). In this work, Newton presented mathematical equations that described the basic forces in natural philosophy, which is now called physics, including the force of gravity.

5 The big twist was that instead of describing how objects fell toward the Earth, Newton described how any two objects could attract one another via gravity. For most objects, such as a book and a sandwich, this force is so minute that it is effectively zero. However, if one of the objects is extremely large, like the Earth, then the effect is quite powerful. The reason things fall toward the Earth is not because the Earth is special; rather, it can be explained merely from the relative size of the Earth and the proximity of the object in question. Therefore, gravity is a constant force in the universe—it applies to all objects, everywhere. This was a revolution. Not only that, this formulation of gravity also had the power to explain the motions of heavenly bodies.

6 During the nineteenth century, however, it was becoming clear that Newton's formulation of gravity was not exactly right. It could not explain the way objects worked on very large or very small scales, for instance, the movement of galaxies or the behavior of subatomic particles. Newton's theories and equations were built for the world that we could see and touch, but they stopped working so well at the new microscopic and macroscopic levels where scientific measurement was breaching. These new phenomena could only be explained with Albert Einstein's exotic notions of relativity and curved space-time. However, it is a great testament to Newton's formulation of gravity that it stood for over 200 years and explained the world under such a wide range of circumstances.

1. Why does the writer ask how ancient people could have observed the same things and yet not know that smaller bodies, like people and stones, naturally fall toward larger bodies, like the Earth in paragraph 1?

(A) To emphasize the difference in intelligence between ancient and modern humans
(B) To introduce a historical overview of the development of a theory of gravity
(C) To criticize the common view that gravity is just a technical, scientific concept
(D) To insinuate that everyone can appreciate the effects and beauty of gravity

2. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) There was a building made of earth, fire, air, and water, but the earth component was too heavy, which made the rest of the building fall to the Earth.
(B) The Greeks created the first notion of gravity, which they used to explain why earth was greater than the other three elements: fire, wind, and water.
(C) Since the Greeks knew that earth was heavier than water, fire, and air, they could calculate gravity by substracting the three lighter elements from the earth element.
(D) The Greeks already believed in four basic elements (earth, fire, air, water), so they explained gravity by saying the earth is heavier and other things fall to it.

3. What can be inferred from paragraph 4 about Newton's work?

(A) In Newton's time, physics was considered a kind of philosophy.
(B) Newton had made important mistakes in his initial calculations.
(C) Newton's work was never fully accepted in his own lifetime.
(D) His first book was one of many that Newton would publish.

4. According to paragraph 6, what is the problem with Newton's conception of gravity?

(A) It does not work on extreme scales.
(B) It assumes too many cosmic forces.
(C) The math is too complex for normal use.
(D) It tries to explain too many phenomena.

5. Complete the table below to summarize the information about the scientists discussed in the passage. Match the appropriate statements to the man with which they are associated. Two of the statements will NOT be used.

Scientists	Statements
Aristotle	**Select 2** • •
Newton	**Select 3** • • •

(A) Explained gravity functions on very large objects like galaxies
(B) Described gravity as a force acting between any two objects
(C) First described the effects of gravity using mathematics
(D) Explained that heavier objects naturally fall faster than lighter objects
(E) Built on the experiments recently conducted by Galileo
(F) Introduced the idea that space-time can be curved
(G) Said gravity works because earth is the heaviest element

UNIT 34

Planetary Orbits

1 Humans have been fascinated by the night skies since time began. At some point, ancient men noticed that certain stars moved in an unusual path across the heavens. Whereas most stars rise in the East and slowly creep across a steady and straight course to finally set in the West, there were several other stars in existence that did not conform to this pattern. The ancient Greeks called them asteres planetai, which means "wandering stars," and which are known today simply as planets, because they had a tendency to wander back and then forward again along their trajectories. The ancients saw that these planets held a special status distinct from that of other stars and even came to suggest their strange motions were due to orbits.

2 However, conventional wisdom maintained that the Earth was stationary since, as common sense dictates, it is not felt moving. Therefore, the pervasive paradigm up until the 1600s was the geocentric model, with the Earth motionless in the center of the entire universe and the planets orbiting around it. The planets also included the sun and the moon, since they appeared to orbit the Earth as well.

3 Heliocentrism had also enjoyed scattered proponents and supporters from civilizations as diverse as ancient Greece, Babylon, ancient India, and the Islamic world. Yet it was not until the early sixteenth century that Polish priest Nicolaus Copernicus succeeded in starting a serious revival of the venerable worldview. Heliocentrism was again initially met with ridicule and rejection, even from the revolutionaries of the day, such as Martin Luther. In spite of this, it would be a seed to bear great fruits for future generations.

4 Young Johannes Kepler was a gifted mathematician bent on taking a rigorous, scientific approach to astronomy, which in his day was still bound up with astrology. He took heliocentrism as a starting point and attempted to calculate the movements of the known planets. His early work assigned a geometric shape to each planet's path and generated a model in which the course of each planet was determined by three-dimensional shapes of increasing complexity. For instance, there was a cube for Saturn, a pyramid for Jupiter, and more complex shapes for the inner planets.

5 Kepler was extremely pleased with the beauty and elegance of the system but was never able to get the mathematics to work right. Seething with frustration, he sought more precise data from a Danish colleague named Tycho Brahe. Brahe was extremely wealthy and owned the best observational instruments of his time. He also kept precise records of his planetary observations. Unfortunately, Brahe was also rather childish and did not like other scientists looking at his data. Kepler had to wait until Brahe's death to gain full access to the precious measurements.

6 Once Kepler accessed Brahe's data, he had the ability to analyze the various positions of Mars in order to calculate the shape of its orbit. He labored extensively trying to reconcile the data with a conventional circular orbit and then made dozens of attempts at making an ovoid orbit work. Finally, in 1605, he decided to try a new shape, an ellipse, which is now known to be right. In 1609, he published his classic text *Astronomia Nova* (The New Astronomy), in which he presented his three laws of planetary motion. The first and most significant of these stated that Mars has an elliptical orbit with the Sun at one of the foci. In a later work, he extended this principle to all of the planets.

7 After Kepler's death in 1630, his texts continued to be widely read for many years. However, in many respects, they also failed to receive the full attention they so deserved. They were largely ignored, for instance, by astronomer and physicist, Galileo Galilei, and philosopher and mathematician, René Descartes, two of the greatest thinkers of that time. As time passed, Kepler's predictions were verified by future observations. Eventually, Isaac Newton and Gottfried Leibniz constructed the mathematical framework today known as calculus to describe planetary motion. This finally tipped the scales once and for all in favor of a Keplerian view of the solar system.

1. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) Because these stars moved back and then forward again, the Greeks called them "wandering stars," or asteres planetai, from which the modern term planets is derived.
(B) In the time of the Greeks, the planets, or asteres planetai (wandering stars), moved in long back and forth trajectories, whereas today these are much shorter.
(C) As the Greeks often could not find certain stars, they called them asteres planetai (today: planets), which means "wandering stars," to indicate their elusive behavior.
(D) These "wandering stars," or asteres planetai, today simply called planets, were the last stars to be discovered by the Greeks, and so received their special names.

2. According to paragraph 2, why was the geocentric theory popular throughout most of history?

(A) The church had strongly supported it.
(B) People cannot feel the Earth's movements.
(C) The sun appears much smaller than the Earth.
(D) Advanced mathematics had not been developed yet.

3. What can be inferred from paragraph 4 about astronomy?

(A) Kepler had been a close friend of Nicolaus Copernicus.
(B) People from this time believed that planets had exotic shapes.
(C) Many astronomers from that era also practiced astrology.
(D) Kepler's poor eyesight often interfered with his work.

4. Why does the writer mention that Brahe was rather childish in paragraph 5?

(A) To provide background information on his relationship with Kepler
(B) To contrast the genius of this scientific mind with his personal quirks
(C) To offer Brahe's young age as an excuse for his unreasonable behavior
(D) To explain why Kepler could not gain access to the data immediately

5. Complete the table below to summarize the information about the planetary theories discussed in the passage. Match the appropriate statements to the theory with which they are associated. Two of the statements will NOT be used.

Planetary Theories	Statements
Traditional	**Select 2** • •
Keplerian/ Copernican	**Select 3** • • •

(A) Jupiter and Saturn are distinct planets called gas giants.
(B) The Earth is the center of everything, and the planets revolve around it.
(C) This theory was not accepted by the great thinkers Galileo and Descartes.
(D) The Earth and the other planets orbit around the sun.
(E) The sun was born from the compression of a nebula.
(F) Planets have an elliptical orbit with the sun at one focus.
(G) The planets, including the moon and sun, have circular orbits.

UNIT 35

Newton's Laws of Motion

1 Sir Isaac Newton had a humble beginning. Born prematurely in 1643 to a farmer's widow, who noted that the immensely tiny infant could fit inside a quart mug, he survived—the first among many surprises with which he would stun the world. He was reared in the English countryside and quickly proved himself a precocious student. After attempting farming briefly in his late teens, Newton permanently returned to academia to pursue mathematics and science.

2 Newton attended Trinity College in Cambridge, where he was exposed to traditional ideas and where he also extensively read texts from innovative thinkers like Descartes, Galileo, and Kepler. During the remainder of his career, Newton would make unprecedented contributions to mathematics, optics, and mechanical physics. His ideas would become the foundations of modern science and would stand unrevised for nearly two centuries.

3 His most influential work is *Philosophiae Naturalis Principia Mathematica* (Mathematical Principles of Natural Philosophy), which he published in 1687 at the age of 44. In this work, he presented detailed mathematical descriptions of the motions and forces affecting objects in the world. One of the most impressive aspects was that these mathematical formulae applied to all objects and could describe the motion of everything from apples to asteroids. The Principia, as this work is often called, provides three basic laws to describe all motion in the universe.

4 Newton's first law, called the law of inertia, states that if the total force on an object equals zero, then it will continue in its current state of rest or motion. Thus, for instance, if a stone is motionless, it will remain motionless until an outside force acts upon it, such as the wind or a foot kicking it. Furthermore, if a rock is flying through the air, say, because it was thrown, then it will continue at the same speed indefinitely unless another force acts upon it, such as gravity or air friction. Of course, in the real world, there is always a force to act upon a moving object.

5 Newton's second law, called the law of acceleration, states that the acceleration of an object is equal to the total force acting on the object divided by its mass. Likewise, it can be said that the total force acting on an object is equal to its mass times its acceleration. This means, for instance, that if a person kicks a rock twice as hard, then it will go twice as fast. Or, if a person kicks a rock against the wind, then the acceleration of the rock will depend on the force of the kick minus the force of the wind.

6 Newton's third law, called the law of reciprocal actions, states that every action has an equal and opposite reaction. For instance, suppose two billiard balls are traveling directly at each other at five miles per hour. After they collide, they will each be moving five miles per hour in the opposite direction.

7 These laws had huge implications for gravity. For instance, according to Newton's third law, a rock falling toward the Earth is also exerting a gravitational pull on the Earth. This gravitational pull is so miniscule that it is negligible. However, for larger objects, such as the moon, this reciprocal effect is not negligible, as can be seen from the ocean tides. Newton was also able to demonstrate Kepler's laws of planetary motion based on his own general laws of motion. The orbits of the planets, with the properties identified by Kepler some 70 years earlier, could be described from the ground up using the planets' masses, accelerations, and the gravitational attractions of the sun.

8 As we now know, these laws begin to divorce from reality when we examine extremely large or extremely small objects. These problems motivated new theories in the twentieth century that are still being elaborated, refined, and harmonized. The newer theories are extremely technical, for instance, involving as many as eleven dimensions, instead of the conventional three dimensions plus time. For those who are not scientists, Newton's laws are still an elegant tool for describing motion in the world.

1. What can be inferred from paragraph 2 about Newton?
   - (A) Today, people believe Newton's ideas are basically wrong.
   - (B) Newton was known as the best student at Trinity College.
   - (C) Descartes, Galileo, and Kepler were not traditional thinkers.
   - (D) Newton achieved great fame and wealth in his lifetime.

2. According to paragraph 3, what was the most important aspect of Newton's laws?
   - (A) They were more precise than previous laws.
   - (B) They did not rely on antiquated concepts.
   - (C) They were simpler to use than Kepler's laws.
   - (D) They applied to all objects everywhere.

3. Why does the author mention there is always a force to act upon a moving object in paragraph 4?
   - (A) To point out why objects normally slow down or stop eventually
   - (B) To argue that the first law does not always work perfectly in reality
   - (C) To emphasize the dynamic nature of the universe and its unpredictability
   - (D) To reject the idea that energy can accumulate over increasing distances

4. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.
   - (A) Newton's laws, plus the relevant properties of the planets and the sun, could be used to derive the laws of planetary motion that Kepler had formulated previously.
   - (B) The surface of the planets and the sun could be described using Kepler's principles plus the mass, acceleration, and gravitational attraction.
   - (C) Newton's calculations made on the mass, acceleration, and gravity of the sun and the planets showed that Kepler's original equations were incorrect.
   - (D) Newton used Kepler's laws, formulated over 70 years ago, to prove his own laws based on the mass, acceleration, and gravity of the sun and the planets.

5. Complete the table below to summarize the information about the laws discussed in the passage. Match the appropriate statements to the law with which they are associated. Two of the statements will NOT be used.

Laws	Statements
Law 1	**Select 2** • •
Law 2	**Select 2** • •
Law 3	**Select 1** •

   - (A) Can be used to calculate the effect of wind on a moving baseball
   - (B) States an object at rest will not move unless a force acts on it
   - (C) Describes why a person might get shorter in their old age
   - (D) States as the sun shines on the water, the temperature of the water increases
   - (E) Used to measure the acceleration of an object based on force and mass
   - (F) Describes why a person feels a kick when firing a gun
   - (G) An object in motion will keep going until a force acts on it

UNIT 36

Thermodynamics

1 In the post-Newtonian scientific world, physicists planned to wield their powerful new mathematical principles and carve modern science and engineering from the murky unknown. In the late eighteenth century, thinkers began creating devices that would eventually evolve into the steam engines that would permit the possibility of traversing the world in 80 days. Scientists quickly began discovering new principles to describe the workings of these machines. For instance, Robert Boyle posited the law that the pressure of a gas increases when the volume of its container decreases. It rather quickly became apparent that in order to create efficient and effective engines and machines, an entirely new science of energy would be required. This innovative science would aptly describe the quantities of energy as they enter a machine or system, pass through it, and finally exit in the form of work, motion, or heat loss, among other things. This science is thermodynamics; its name is derived from the ancient Greek roots meaning heat power.

2 Thermodynamics proved to be an incredibly fruitful field of inquiry, producing four fundamental laws that have found nearly ubiquitous application, from physics and engineering, to chemistry, biology, and even information technology. The laws were not originally formulated in the order they are commonly offered today. They instead range from Zeroth to Third, rather than First through Fourth.

3 The Zeroth Law of Thermodynamics states that if two systems, A and B, are in equilibrium with a third system, C, then they are also in equilibrium with each other. Equilibrium here means that they are in contact and their temperatures and pressures are the same. For instance, if a room is 70 degrees and the hall is 60 degrees, they are not in equilibrium. If the door is open and you wait a bit, then the room's temperature will drop to 65, and the hall temperature will rise to 65. Then they are in equilibrium. If another room was already in equilibrium with the hall, it will now be in equilibrium with the first room too. Therefore, given time, systems will be in equilibrium with all systems with which they are in contact.

4 The First Law is the law of conservation of energy. In essence, energy can neither be created nor destroyed: it can only shift around and change forms. For instance, all the energy contained in gasoline will become motion (of the engine) or heat released into the air. Energy cannot simply disappear into nothing or arise from nothing.

5 The Second Law states that entropy will increase over time until equilibrium is reached. Entropy is a word thermodynamicists invented to mean the tendency for the temperature of a system to even out over time. In other words, entropy means all systems strive toward equilibrium. A classic example is ice cubes melting in a room that is at room temperature. According to the Second Law, the melting of ice cubes will increase over time until they are transformed into water that is the same temperature as the room.

6 The Third Law says that entropy will approach zero as the temperature approaches absolute zero (zero on the Kelvin scale). It cannot say that entropy equals zero at a temperature of absolute zero because it is not theoretically possible to achieve a temperature of absolute zero. However, at temperatures that are practically absolute zero, entropy practically grinds to a halt. As an example, it is more difficult to move in colder temperatures because the processes that exchange heat and energy and create work function more slowly at lower temperatures.

7 These laws are now cornerstones of science: engineers use them to make machines efficient; biologists use them to describe evolution and ecosystems; and meteorologists use them to predict weather patterns. They are also the proof that perpetual motion machines—machines that keep running forever—are impossible.

8 There is a popular humorous summary of the laws of thermodynamics: people must play, people can't win, people can't break even, and people can't quit. People must play (Zeroth Law) because they must strive toward equilibrium with other systems. They cannot win (First Law) because energy cannot be created from nothing. They cannot break even (Second Law) because entropy increases. And finally, they cannot quit (Third Law) because they cannot reach absolute zero.

1. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) The science of thermodynamics, consisting of four laws, asked many questions that proved the existence of efficient machines used in engineering, chemistry, biology, and information technology.
(B) Thermodynamics turned out to be very successful, and the four laws are now used for many different purposes such as physics, chemistry, biology, and computer science.
(C) Many scientists such as chemists and physicists use thermodynamics today to create their own distinct sets of four laws for new applications.
(D) The four basic laws of thermodynamics were originally proven by a fruit grower while working in his field. Today, they are used in many different sciences, like physics, biology, chemistry, and computer science.

2. According to paragraph 4, what law explains that you cannot make fire without fuel?

(A) Zeroth
(B) First
(C) Second
(D) Third

3. What can be inferred from paragraph 7 about the development of thermodynamics?

(A) It was an effort that lasted hundreds of years.
(B) Its author was an expert in Ancient Greek.
(C) It was developed by many different people.
(D) It was initially met with great skepticism.

4. Why did the writer mention the humorous summary in paragraph 8?

(A) To state the formally-accepted present-day formulation of thermodynamics
(B) To give a counterexample to a controversial claim made earlier in the passage
(C) To illustrate the background motivations for studying systems in this way
(D) To provide the reader with an easy tool for remembering the four laws

5. Complete the table below to summarize the information about the laws discussed in the passage. Match the appropriate statements to the law with which they are associated. Two of the statements will NOT be used.

Laws	Statements
First	**Select 2** • •
Second	**Select 2** • •
Third	**Select 1** •

(A) All systems accelerate toward a state of equilibrium.
(B) All of the energy in a system is used.
(C) Two systems connected to a third system are also connected to each other.
(D) Any system with too much energy eventually breaks into smaller ones.
(E) On a warm day, snow melts faster and faster until it reaches air temperature.
(F) Entropy works more slowly at extremely cold temperatures.
(G) A machine that can make energy endlessly from nothing is not possible.

UNIT 37

Benjamin Franklin

1 When the origins of electricity are mentioned, thoughts often drift to the familiar image of Benjamin Franklin flying a kite in a thunderstorm. In fact, people had known about electricity in some form since antiquity. The word itself comes from the ancient Greek word electron, which was their word for amber. The Greeks used to use bits of amber to produce sparks via static electricity.

2 One of the early breakthroughs during this time came when a Dutch scientist at the University of Leiden invented a primitive device to store electrical charge. This device, called a Leiden jar, consisted of a glass jar with foil wrapped around the outside. An electrode on top was connected by a chain or wire to the interior, which was filled with water. At the time, it was assumed that the charge was stored in the water—the basis for many early experiments with electricity.

3 It would not appear from a cursory view of Benjamin Franklin's early life that he would carry the science of electricity from its infancy up to a level of understanding where giants like Faraday, Maxwell, and later, Edison would harness its full potential. Indeed, there are many other things for which Franklin is remembered. However, this printer's apprentice and father of a revolution did find the time to electrify the scientific world with these insights.

4 Born in Boston in 1706, Franklin was the fifteenth child and the youngest son of an English candle and soap maker. Due to the family's size and limited funds, Franklin enjoyed only two years of schooling, after which he completed his education via private reading. At 12, he went to work under his older brother, James, who had become a printer. This was a unique and exciting opportunity because three years later, James created the first independent newspaper in the American colonies. Franklin was considered too young to write for the paper, so he hatched a pen name Mrs. Silence Dogood, under which he would publish popular articles in the paper. His brother was displeased to discover Mrs. Dogood's true identity, and at age 17, Franklin ran away from home to seek a new life in Philadelphia.

5 After working as a shopkeeper for several years, Franklin succeeded in setting up his own newspaper, *The Pennsylvania Gazette*. This would become a mouthpiece for his political views and help earn his status as a respected citizen and thinker. In 1748, he retired from printing and set up other business ventures that secured him the necessary wealth to devote much of his time to more political and scientific pursuits.

6 It was in 1750 that he first published a description of an experiment of flying a kite in a storm to demonstrate that lightning is in fact a kind of electricity. In June of 1752, he attempted the experiment and successfully gathered electrical charge from a kite into a jar. Unfortunately, some other experimenters without Franklin's understanding of electricity also tried this without the proper safety precautions and electrocuted themselves.

7 Franklin also invented a crude kind of battery by arranging a series of Leiden jars together in a container. He coined the term battery by analogy with a battery, or grouped arrangement, of cannons. He also provided ground-breaking insights into the functioning of electricity. It was he who proposed that electricity was not two different kinds of fluid but rather a single fluid under different pressures, which he called positive and negative. It was also he who first proposed that it was not the water in the Leiden jar, but the glass of the jar itself that carried the electrical charge. His theories also led him to invent the lightning rod, based on the notion of electrical grounding.

8 These achievements consolidated earlier theories into a framework that enabled the great breakthroughs of the next century. These breakthroughs, pioneered by a slew of scientists whose names would end up as electrical units, such as the Volt, Watt, Ampere, and the Ohm, would culminate in the electrical grids of the twentieth century.

1. Why does the writer mention Franklin's family size and limited funds and education in paragraph 4?

(A) To criticize the state of childhood education in the American colonies
(B) To argue that Franklin was most likely poor-mannered in his youth
(C) To reinforce the statement that electricity was not an entirely new idea
(D) To demonstrate that Franklin was not from a privileged background

2. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) Franklin failed at printing in 1748 and went into other businesses. He failed at these, too, but finally ended up making lots of money as a politician and a scientist.
(B) Franklin quit printing in 1748 and got involved in other business dealings. These were quite profitable and allowed him to spend time on statesmanship and research.
(C) In 1748, Franklin realized he was spending too much time on politics and electricity, so he left the printing business and hired others to invest his wealth for him.
(D) Franklin retired in 1748 and began working as a scientist full time. This enabled him to earn a great deal of money and offered him a lot of free time.

3. What can be inferred from paragraph 7 about electricity?

(A) Before Franklin, scientists believed in two kinds of electrical fluid.
(B) The first electrical batteries were designed to be used as weapons.
(C) Electricity became widely discussed shortly after Franklin's death.
(D) The lightening rod was first used at low places close to the ground.

4. According to the passage, which of the following was NOT among Franklin's achievements?

(A) The invention of the Leiden jar
(B) The invention of the first battery
(C) The invention of the lightning rod
(D) Proof that lightning is electricity

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

Electricity was observed long before Benjamin Franklin, but was not actively studied in depth until his accomplishments.

(A) An important early advance was the invention of the Leiden jar, which could store electrical charges.
(B) Franklin first rose to success as a printer, then succeeded in business, allowing him to spend time on politics and research.
(C) Franklin's father was just a poor soap maker, and Franklin himself only had two years of schooling.
(D) Franklin's understanding of electricity was so keen that others who tried his experiment were electrocuted.
(E) Franklin actually came up with the word battery, as a metaphor relating to cannons that are grouped together.
(F) Franklin's electrical research and inventions were prolific and served as a bridge to our modern understanding.

UNIT 38

Electrical Generation

1 In a pre-electrical world, people likely heated their home with wood, lit their home with candles, and communicated with others via words written on pieces of paper or word of mouth. Today, in much of the world, most or all of these functions are performed by electrical power. When people imagine great ideas or have jolts of inspiration, there is often the visual image of a light bulb appearing over the head. The image is powerful and inviting, but the real development of electrical power, or even just the light bulb, certainly did not happen over night. The full potential of electrical energy was gradually elaborated and incorporated into the lives of people over a hundred years via the insights and efforts of dozens of scientists and visionaries.

2 To find a good starting point, one must return to the year 1800 during which the first modern electric battery was developed. Italian Alessandro Volta found that a combination of silver, copper, and zinc was ideal for producing an electrical current. The enhanced design, called a Voltaic pile, was made by stacking some discs made from these metals between discs made of cardboard soaked in sea water. There was such talk about Volta's work that he was called to conduct a demonstration before the Emperor Napoleon himself.

3 The link between electricity and magnetism was first noted in 1820 by Danish physicist, Hans Christian Oersted. Oersted realized that his compass needle changed directions when he turned on his battery. The needle would even point in different directions depending on the direction of the battery's current. In the same year, this discovery led French researcher André-Marie Ampère to develop the first mathematical equations for electromagnetism and techniques for measuring current.

4 In 1831, Michael Faraday of England uncovered a crucial principle known as electromagnetic induction. He found that moving a magnet back and forth inside a wire coil would cause, or induce, a measurable current in the coil. He described this effect in an equation called Faraday's Law. This concept is the underlying principle in a wide range of modern devices, including generators, transformers, and microphones. Though these marvels would not be immediately forthcoming, the telegraph was perfected by American Samuel Morse in 1837. By 1854, there were telegraph lines spanning from Boston to Los Angeles.

5 The momentum of the above advances climaxed in 1865 with Scotsman James Clerk Maxwell's paper called *A Dynamical Theory of the Electromagnetic Field*. This work definitively exhibited that electricity and magnetism were really two aspects of a single force. Maxwell also provided four equations that described the behavior of electromagnetic fields. He even detected the speed at which these forces travel and surmised that visible light itself is actually just a kind of electromagnetic radiation. This work was the last piece of the puzzle and would ultimately bring electricity out of the lab and into people's homes.

6 The rest of the nineteenth century witnessed a frenzy of invention, led by Thomas Edison. Edison is best known for such electrical devices as the light bulb, the phonograph, and the motion picture camera. In addition to these, he also set up the first commercial electrical network in the world. In 1882, Edison began providing electricity to fifty-nine customers in Manhattan, New York City. However, in 1888, a Serb-American physicist, Nikola Tesla, made advances that led to Alternating Current, or AC electricity. AC had certain advantages and eventually outcompeted Edison's traditional Direct Current, or DC systems. The last DC current network in New York City was shut down in 2005.

7 Today, homes, business, and buildings the world over are powered by huge AC generators. These use large magnetic shafts that are rotated to produce electrical current, much like Faraday's magnet in 1831. The power used to turn these shafts typically comes in the form of steam turbines. Various energy sources are used to heat the water for the steam. In the United States, coal is still the most used, followed by nuclear fission, natural gas, hydroelectric power, and finally petroleum. In the future, cleaner technologies such as solar power are expected to develop.

1. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) In spite of the huge number of hard-working scientists, it took about a hundred years to transform the completed theories of electricity to inventions that would enrich the lives of the average person.
(B) Hundreds of scientists and laymen labored for dozens of years to construct the necessary facilities for the production and distribution of adequate amounts of electrical power.
(C) Electricity was only fully understood and utilized after many, many years of organized research conducted by scores of ordinary people under the direction of highly-skilled scientists.
(D) Thanks to hard work and discoveries by many scientists throughout the course of a century, the possibilities of electricity were slowly worked out and brought into general application.

2. Why does the writer mention Napoleon in paragraph 2?

(A) To illustrate the power of the French Empire and their influence at this time
(B) To contrast this with other world leaders' interest in scientific research
(C) To highlight the popularity and excitement surrounding this early work
(D) To introduce an element of competition in the development of electricity

3. According to paragraph 3, who developed the first techniques for measuring electrical current?

(A) Oersted
(B) Ampère
(C) Faraday
(D) Maxwell

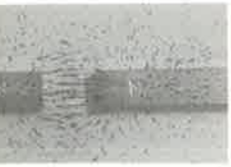
4. What can be inferred from paragraph 4 about Faraday and his work?

(A) Michael Faraday had become a personal friend of Samuel Morse.
(B) Faraday would go on to invent several important modern devices.
(C) Generators, transformers, and microphones all contain magnets.
(D) England was a leading producer of quality magnets at this time.

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

Electricity is now a basic component of the modern way of life, but its development took place over a long period of time and required contributions from many brilliant researchers.

(A) Early work involved producing and measuring currents and discovering their link with magnetism.
(B) Oested noticed that a compass needle will change directions under the influence of a battery.
(C) Samuel Morse invented the first high-quality telegraph, which later spanned across the entire United States.
(D) Building on Faraday's work with induction, Maxwell unified and described the electromagnetic force.
(E) A period of rapid invention, including the rise of AC power, ushered in the modern electrical age.
(F) Though coal is our main source of electrical power, cleaner sources may be used more in the future.



UNIT 39

The Principles of Magnetism

1 Magnetism may be a phenomenon that is not generally understood by the average person, but magnets, on the other hand, are objects with which most people are familiar. If nothing else, their refrigerators are adorned with magnets. In fact, magnets were known to the ancient Chinese and the ancient Greeks. Today, however, scientists understand that magnetic forces are actually just an aspect of electricity and that the Earth itself, believe it or not, is actually a gigantic magnet. They are, in fact, still learning new things about magnetism, as evidenced by the recent discovery of stars called magnetars with superpowerful magnetic fields.

2 Humanity's earliest experiences with magnets and magnetism, in great likelihood, were via contact with a mineral known as lodestone. This mineral is a kind of iron ore that acts as a naturally occurring magnet and is attested in Chinese texts as being from as early as the fourth century BCE. The word magnet is derived from a region of Greece called Magnesia, which was an early source of lodestone in the civilization. By the twelfth century CE, the Chinese were already fashioning these stones into compasses for navigation.

3 The functioning of the compass was first explained by Englishman William Gilbert in 1600 when he correctly theorized that the Earth actually functions like an enormous magnet. This amazing prediction was only definitively confirmed in 1958 by the United States' first satellite, Explorer I, when it detected what would come to be called the Earth's magnetosphere. Today, it is known that the magnetosphere is caused by the circulation of liquid metals inside the Earth's core.

4 How does a magnet work exactly? Consider, for example, a bar magnet. This is a metal bar with two different ends, called poles, which have two distinct values, north and south. Due to the charges of the particles at the different ends, they will attract opposite poles and repel poles of the same charge. Therefore, two north poles will repel each other, as will two south poles, whereas a north pole will attract a south pole, and a south pole will attract a north pole. The type of magnet is called a permanent magnet.

5 There is another kind of magnet, called an electromagnet, which can be activated and deactivated by an electrical current. A simple electromagnet can be fashioned by taking a wire and coiling it into loops, referred to as a solenoid. A magnetic field is produced by sending an electrical current through the solenoid, and it disappears when the electrical current is removed. Electromagnets are often used, for instance, in industrial cranes that lift and move large quantities of scrap metal.

6 Since magnetism is a notoriously abstract concept, scientists set about devising methods to help people visualize its behavior. Faraday proposed a helpful method for envisioning a magnetic field. He suggested imagining a line of force extending from each pole of a magnet and curving in the direction in which it would orient a magnetic object. These lines are called magnetic field lines and can be represented in a diagram. One can even make this kind of diagram naturally. First, place a piece of paper on top of a magnetic bar. Then take some iron filaments and sprinkle them onto the paper. The iron filaments will naturally align themselves along the magnetic field lines.

7 Another interesting technique is the right-hand rule, which is a method for learning the direction of a magnetic field produced by an electrical current. It says that if you curl up your fingers as if making a fist of the right hand but with the thumb extended upward, then the fingers will point in the direction of the magnetic field produced by an electrical current, the direction of the current being represented by the thumb. Thus, the thumb points in the direction of the current along the solenoid, and the fingers curl in the circular direction of the magnetic field.

8 Today, people can find magnets all around: in speakers and headphones, credit cards, computers, tape players, televisions, and anything with a motor. Though the principles at work behind magnetism are quite subtle and complex, scientists and laypersons alike can appreciate the innumerable applications they play in our daily lives.

1. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) In 1958, this guess was validated by Explorer I, the first U.S. satellite, which was specifically sent to discover the magnetosphere.
(B) Gilbert's theory was finally shown to be true when the magnetosphere was discovered by the U.S. satellite, Explorer I in 1958.
(C) Surprisingly, it was only partly true, as shown by the U.S.'s first space satellite, Explorer I, when it found the magnetosphere in 1958.
(D) The magnetosphere, which proved this theory, was detected many times, but only definitively in 1958 by a brave U.S. astronaut.

2. What can be inferred from paragraph 4 about bar magnets?

(A) One can divide a magnet and get just one pole.
(B) One cannot switch a south and north pole.
(C) One can put two south poles together.
(D) One cannot put two north poles together.

3. According to paragraph 5, what materials are needed to make a magnetic field line diagram?

(A) Pen, protractor, and graph paper
(B) Lodestone, compass, and AA battery
(C) Bar magnet, paper, and iron filaments
(D) Solenoid, copper wire, and compass

4. Why does the writer mention industrial cranes in paragraph 7?

(A) To remove doubt surrounding the usefulness of the electromagnet
(B) To draw the reader's attention to a possible familiar application
(C) To reinforce the idea that magnetic fields can be switch on and off
(D) To invite the reader to challenge his/her notions about electromagnets

5. Complete the table below to summarize the information about magnets discussed in the passage. Match the appropriate statements to the type with which they are associated. Two of the statements will NOT be used.

Magnets	Statements
Permanent Magnets	**Select 2** • •
Electromagnets	**Select 3** • • •

(A) Can be fashioned from loops of wire
(B) Has one pole on each end
(C) Created when struck by lightning during a storm
(D) The ancient Chinese first described their functioning in detail
(E) First historical example is the lodestone
(F) Can be switched on and off
(G) The direction of its field can be discovered using the right-hand rule

UNIT 40

The Compass

1 To many, a compass may seem like a simple and uninteresting historical artifact of little relevance in a modern world with global positioning systems. Yet this unassuming instrument has been with humanity through many of its most decisive moments. The rise and perfection of the compass in fact had a great deal to do with humanity's rise from relatively isolated warring states to a global society with proclivities toward exploration and learning. One of Albert Einstein's favorite stories from his childhood is about a compass that was given to him by his father. He maintained that it was its mysterious ability to always find north and point to it, regardless its orientation, that first inspired him to believe that there must be some deeply hidden force in the universe.

2 Though there is a degree of uncertainty and debate surrounding the origins of the compass, it can at least be said for sure that the Chinese had a device that could be called a compass by the twelfth century CE. Though a handful of earlier texts mentioned aspects of compasses, such as magnetic rocks or magnetized needles, the first incontrovertible reference is found in Zhu Yu's work *Pingzhou Ke Tan* (Pingzhou Table Talks). Here, Zhu Yu specifically states that a navigator watches a compass when he cannot see the stars at night. This early compass that Zhu Yu mentions would not have looked like a modern compass but rather a needle floating in a bowl of water.

3 It is unclear whether the compass came to Europe over the old Silk Road, or whether it was invented or discovered independently, but it is clear that it was at least known by the late twelfth century. In 1190, Alexander Neckam explicitly describes sailors using a magnetized needle for the purposes of navigation in his work *De Naturis Rerum* (On the nature of things). The compass had a far-reaching impact on European trade and society. It could be used anywhere in any season and in any weather, unlike traditional methods of navigation such as using the constellations. Therefore, it greatly extended the sailing seasons and facilitated enhanced exchange of technology and ideas.

4 In addition to its effect on business, the appearance of the compass also scintillated European curiosity as to the nature of its functioning. As with any poorly understood phenomenon, a variety of rumors and guesses circulated. Some supposed that it might work because of an attraction from the North Star (Polaris). Others ventured that there might be a magnetic island near the North Pole. The theory that we now know to be correct was posited by Englishman William Gilbert in his work *De Magnete, Magneticisque Corporibus, et de Magno Magnete Tellure* (On the Magnet and Magnetic Bodies, and on the Great Magnet the Earth), published in the year 1600. In it, Gilbert argued that the underlying cause of the compass's behavior was that the Earth itself was in fact a giant magnet.

5 Today, of course, this is known to be the case: the compass points north because of the Earth's magnetosphere. Magnetic field lines run from the Earth's magnetic North Pole around and down into its magnetic South Pole. The magnetic north pole of the compass's needle is repelled by the Earth's magnetic north pole, which causes it to point south. The pointer end of a compass needle is in actuality the south pole of the magnetic needle.

6 It is, in fact, not hard to make a compass out of common household materials. It is possible to take a needle and stroke it from the back to the point several times with a bar magnet in order to magnetize the needle. Next, cut a small piece of cork and drive the needle through the center of the cork to the other side. Now all that is needed is a glass of water whose diameter is greater than the length of the needle with some room to spare. When the needle is placed on the surface of the water, the piece of cork will keep it afloat, and the needle will naturally rotate until it has aligned itself on a north-south axis.

1. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) For some unknown reason, he was able to always find north, just like a compass, which led everyone to think he would grow up to be a great scientist.
(B) He found that he did not care about the position of a compass but instead cared about finding the hidden force, or fifth force, in the universe.
(C) He said that he first became interested in discovering the nature of the inner workings of the universe because of the behavior of his compass.
(D) He still denied the idea that a compass is magical, insisting instead that a hidden universal force was responsible for its mysterious orientation.

2. What can be inferred from paragraph 3 about compasses?

(A) Historically, Europeans could not sail during certain times of the year.
(B) The compass was brought to Europe by the Arabs living in Moorish Spain.
(C) Alexander Neckam invented the first compass specifically for sailors.
(D) Originally, wealthy Europeans would wear a compass as a mark of status.

3. Why does the writer mention Gilbert's theory of the Earth as a magnet in paragraph 4?

(A) To suggest a possible explanation for a topic that is still under investigation
(B) To cast doubt on the two scientific hypotheses presented earlier
(C) To introduce the explanation of how the compass works via the magnetosphere
(D) To highlight the profound influence of Gilbert's ideas on renaissance culture

4. According to paragraph 6, what item is not needed in order to make a compass in the manner detailed in the passage?

(A) Water
(B) Cotton
(C) Glass
(D) Cork

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

The compass has been an important instrument in human history.

(A) The compass was first attested in China and shortly thereafter in Europe, where it accelerated trade and progress.
(B) The early Chinese compass did not look modern; it was just a magnetized needle in a bowl of water.
(C) Before the compass, Europeans used to navigate using the constellations, which limited their sailing seasons.
(D) As Gilbert suggested, the Earth's magnetosphere forces the compass's needle to point to the magnetic North Pole.
(E) The north pole of the needle is repelled by the Earth's North Pole, so the head of the needle is really its south pole.
(F) One can even construct a rudimentary compass at home using simple household materials.

UNIT 41

Light and Color

1 Light is unique; it is a concept that has inspired both an entire branch of physics, namely optics, as well as an indispensable image in literary symbolism. Perhaps it was this ambivalent straddling of intellectual spheres that contributed to the slow start in the investigation of its properties. Whereas the ancient Greeks had made a good start laying the groundwork for other fields of inquiry, their mythological account of light confounded their early attempts at explaining its nature. Their theories all held central the view that sight comes from beams that are emitted from the eyes. This, they maintained, was because the goddess Aphrodite had put fire in people's eyes.

2 These ideas pervaded western thought until around the turn of the eleventh century when a scientist from the Islamic world, called Ibn al-Haytham or Alhazen, built the foundations of modern optics. Ibn al-Haytham denied the Greek theory of light and instead suggested that light entered the eye from diffuse points scattered about an object. He also described the general functioning of the eye and the nature of light as a beam that travels at an extreme yet finite speed. Further, he developed equations to explain the reflections and refractions of light and even designed the first pinhole camera. His treatises were translated into Latin and read widely in Europe and the Islamic world through the period leading up to and including the European Renaissance, spawning a rash of new optical discoveries.

3 One visual phenomenon that had captured much attention was the rainbow. Building on the work of Ibn Al-Haytham, Islamic and European researchers began describing how the combination of rain and light resulted in the appearance of a multi-colored arc. Notably, Theodoric of Freiberg, in 1307, correctly identified that the light refracts on entry of the water droplet, then reflects off its posterior wall, and finally refracts again on exiting. In 1637, René Descartes correctly calculated the angles and positions of the various parts of the rainbow. Nevertheless, all of these early theories still failed to explain the nature of light itself, instead purporting the conventional view that the colors resulted from the modification, not the splitting, of white light.

4 The world would have to wait for Isaac Newton, who conducted his famous prism experiment in 1665. In this, Newton demonstrated that light was made up of all of the colors of the rainbow and that the rainbow did not modify the white light, but rather refracted its colors at different angles and separated them.

5 To understand how this works, one should understand that light has two properties with visual effects: intensity and wavelength. Intensity corresponds to the amplitude of the wave and correlates to brightness with respect to our perceptions. This means that the brighter the light, the greater the amplitude of its waves. However, it is the wavelength of light that determines the visual experience of color. Visible light occurs roughly within the wavelengths of 400 to 700 nm, referred to as the spectrum of visible light. This spectrum contains all of the colors of the rainbow, from violet to red: violet corresponding to 400 nm, and red to 700 nm. As it turns out, when light is refracted, for example in a raindrop or a prism, it bends the colors at the lower end of the spectrum more intensely than those occurring at the higher end. This is the principle that causes the colors to separate into their distinct bands.

6 It can similarly be explained why the eyes perceive different objects as being different colors. The underlying idea is that an object can either absorb or reflect light. If an object absorbs the entire spectrum of visible light, then it will appear black because no colors are reflecting off of it. If an object reflects the entire spectrum of visible light, then it will appear white. A clear example for the average person is that black objects often heat up more quickly than white objects, which is due to the fact that they are absorbing heat along with the light, whereas white objects are reflecting it. Other objects appear as a portion of the spectrum that they reflect; therefore, a blue object absorbs all wavelengths except blue and reflects blue.

1. What can be inferred from paragraph 1 about light?

(A) Ancient Greeks used to burn each other's eyes as punishment.
(B) The Greeks made better advances in other fields than in light.
(C) Ancient people could see more keenly than modern people.
(D) The Greeks worshipped light as a goddess and prayed to her.

2. Why does the writer introduce a discussion of rainbows?

(A) To argue that the study of light is not only in relation to technical details, but also beauty
(B) To counter the claim that light should be studied as a beam emitted from the eyes
(C) To reflect on the many ways in which our world is enriched by this phenomenon
(D) To provide examples of how theorists were advancing our understanding of light

3. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) Newton used his experiments to demonstrate that light is immutable and is powerful enough to refract a rainbow and separate it out from the rain droplets.
(B) Newton's rainbow investigations gave evidence that a rainbow cannot modify light; it can only generate different colors after absorbing its energy.
(C) Newton's experiment proved that light was made up of different colors, and that raindrops divided these colors up by bending them, not by changing light.
(D) Newton produced the first beam of light that was made up of all of the colors of the rainbow, which proved that a rainbow cannot be made from only white light.

4. According to paragraph 5, why does a prism split light?

(A) Different colors are bent at different angles.
(B) Black objects cannot reflect white light.
(C) White light always travels in a diffuse path.
(D) Red wavelengths are more intense than violet.

5. Complete the table below to summarize the information about the ideas of the people mentioned in the passage who studied light and color. Match the appropriate statements to the one with which they are associated. Two of the statements will NOT be used.

Scientists	Statements
Ibn al-Haytham	**Select 2** • •
Modern Scientists	**Select 3** • • •

(A) The visual aspects of light can be explained with two properties.
(B) Different colors are actually light moving at different speeds.
(C) Light comes from different points all over an object.
(D) Objects are different colors depending on the part of light that is reflected.
(E) The angle of refraction of an object determines the intensity of light.
(F) White light actually contains all of the colors in it.
(G) Offered the first mathematical description of light's reflection and refraction.

UNIT 42

Particle or Wave?

1 One thing that our collective scientific experience has taught us is that traditional, everyday vocabulary often simply cannot be mapped to create accurate conceptualizations of highly discrete phenomena. One example could be the word empty. When a container is said to be empty, this is understood to be true even if it is known that the container is filled with invisible particles. The word empty is useful in the ordinary world but can be misleading when applied at the microscopic level. In a sense, this kind of subtle yet deceptive twist of language lies at the heart of a debate that raged in physics for hundreds of years: is light a particle or a wave?

2 The origins of this controversy can be traced to the seventeenth century when Dutch physicist Christiaan Huygens's original theory that light was a wave was eclipsed by Isaac Newton's corpuscular theory of light. Newton's notion that light was comprised of little bodies, Latinized to corpuscles, enabled him to explain reflection, refraction, and the functioning of a prism. This, coupled with his fame, made the corpuscular theory the pervasive view for the next 100 years.

3 This changed suddenly when English researcher, Thomas Young, conducted his famous double-slit experiment in 1801, in which he shined a beam of light through two parallel slits in a screen. On the other side, this produced patterns of alternating light and dark vertical bands, similar to the interference patterns of water waves. The interpretation was that light must act as a wave. The light areas must be places where two peaks or troughs met and doubled their amplitudes, and the dark areas must be places where a peak met a trough and they cancelled each other out. The apparent nail in the coffin for corpuscle theory came when Maxwell classified light as a subset of electromagnetic waves.

4 The wave view of light now seemed firmly grounded by the evidence, with one major catch called the photoelectric effect. This was the name given to the fact that metals sometimes emit electrons when light is shone on them. It was the "sometimes," however, that proved to be problematic. Under wave theory, scientists expected a brighter light to produce more electron ejections from the metal and a dimmer light to produce fewer. Yet the determining factor appeared to be the color of the light, rather than its brightness. A blue light would produce electronic ejections even if dim, and a red light would not even if extremely bright.

5 The solution came in 1905 when Albert Einstein successfully accounted for the strange behavior of the electrons by assuming that light has some features of particles and some features of waves. Light does in fact travel like a wave: it has a wavelength, frequency, and amplitude just as prescribed by wave theory. Nevertheless, light also comes in a particular amount, Latinized to quantum, and it is not possible to have an amount of light that is any less than this particular amount. These bits of light, Hellenized to photons, travel like waves and can strike electrons individually. Since a single electron will, in all likelihood, only be struck by a single photon, the frequency of the photon must be high enough to eject the electron from the metal. If the frequency of the light is too low, then a single electron would have to be struck by two different photons in order to eject. Due to the sheer numbers, this practically never occurs. This explains why blue light, which is high frequency, consistently ejects electrons, while low frequency red light consistently fails to.

6 This insight is now known as the particle-wave duality of light. In fact, further research, notably by French physicist de Broglie would show that this applies to all matter and energy, not just light. Contrary to popular belief, it was the photoelectric effect, not the theories of relativity, that earned Einstein his Nobel Prize. It is also significant that this marked not only the end of a long-standing scientific debate on the nature of light but also the beginnings of what would become quantum mechanics.

1. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) The details of the wave theory were first sketched by Christiaan Huygens in the Netherlands, after which Isaac Newton copied his sketches and added the corpuscles.
(B) Most identify the beginning of the debate in the seventeenth century when Newton's new corpuscular theory became much more popular than Huygens's wave theory.
(C) Christiaan Huygens's theory that light is a wave was first defeated when Newton's corpuscular theory was able to predict a solar eclipse in the seventeenth century.
(D) Today, it has been discovered that the first theorist to purport wave theory was actually before Isaac Newton's theory, a Dutch physicist named Christiaan Huygens.

2. What can be inferred from paragraph 3 about light?

(A) Maxwell was an adherent of the wave theory of light.
(B) Young purposely disrupted the beam to produce the effect.
(C) The dark bands were not actually cooler than the light ones.
(D) Young was able to measure single photons in his experiment.

3. According to paragraph 5, what kind of light is most likely to eject electrons from metal?

(A) High-amplitude
(B) Full-spectrum
(C) Long-wavelength
(D) High-frequency

4. Why does the writer mention the work of de Broglie in paragraph 6?

(A) To update the reader on the current, expanded version of the scientific theory
(B) To show that Einstein, though in many ways a genius, also made serious mistakes
(C) To deny the link between earlier wave theories and modern quantum theories
(D) To suggest that Einstein had some assistance in his less theoretical research

5. Complete the table below to summarize the information about particles and waves discussed in the passage. Match the appropriate statements to the theory of light with which they are associated. Two of the statements will NOT be used.

Particle or Wave	Statements
Particle	**Select 2** • •
Wave	**Select 2** • •
Particle/Wave Duality	**Select 1** •

(A) Used in the eighteenth century to predict the melting of sea ice in the Baltic
(B) Enjoyed reaffirmation with Maxwell's classification of light
(C) Makes use of the Latin term quantum and the Greek term photon
(D) Explained reflection and refraction in terms of corpuscles
(E) Formulated to explain the thickness of dissolute shadows
(F) Dominant for 100 years thanks to Newton's reputation
(G) Revived after Thomas Young's double-slit experiment

UNIT 43

Splitting the Atom

1 The concept of a tiny, indivisible building block of matter was first suggested in western history around 450 BCE by a Greek thinker, Democritus, who called it atomos, meaning uncuttable. The idea enjoyed little interest in the ancient world and was largely forgotten until around 1800 CE when an English chemist, John Dalton, found the shortened form, atom, to be a good name for the same concept. Dalton had calculated that substances must be made of something fitting the description of the atom in order for gases to behave the way they do. Little did Dalton, or anyone else at the time know, the atom would be part of the single most powerful and dangerous moment in the history of the world.

2 Of course, it is known today that atoms are not actually uncuttable because there are, in fact, a few ways which they can be cut but with potentially horrific results. Also, these realizations could not have come at a more important and potentially cataclysmic time in history. Although early work on the atom was slow, the pace and motivation for uncovering its true nature accelerated exponentially along with twentieth-century global conflict, until finally coming to a head with the annihilation of entire cities in 1945.

3 Experiments in the late nineteenth and early twentieth centuries had begun isolating and identifying the components of the atom along with the study of radioactivity. By the early 1930s, most of the pieces were in place. Physicists knew that artificially accelerated particles could be fired at atoms and cause them to split, but the consequences of these early results were relatively trivial. The only person to recognize their military implications early on was a Hungarian physicist, Leó Szilárd, who kept them secret for political reasons. To Szilárd's dismay, a series of publications in 1938 ended up coming to the same conclusion: theoretically, splitting uranium atoms could produce a massively destructive chain reaction.

4 Fortunately for everyone, some big obstacles remained. First, the kind of uranium needed to start the chain reaction, uranium-235, was very uncommon, only 0.7% was in naturally occurring uranium. Therefore, a large effort would be needed to get enough of uranium-235 from the commonly occurring uranium-238. Second, no one knew how much uranium-235 would be needed. Some even concluded that it would take as much as 130 tons.

5 The last consideration stemmed from what is called critical mass: the minimum amount of material needed to sustain a nuclear reaction. When an atom is struck by a neutron beam, it splits into smaller components and releases more free neutrons. These neutrons, in turn, strike more atoms, and the process continues. If there are enough atoms, then the process will produce a nuclear explosion. Otherwise, it will simply peter out.

6 A major breakthrough came in 1940 when two German refugees in England calculated that the critical mass was much less than expected: only 1 kilogram. Fearful that Germany's Nazi government might also have this information, a member of the British team, Mark Oliphant, flew to the United States to instigate appropriate action. The American commanders were initially unconcerned because the U.S. had not yet officially entered the war. Oliphant then reported his findings to the leading U.S. particle physicists, including Enrico Fermi and Arthur Compton. They then pressured President Roosevelt to fund top priority research on nuclear weaponry, resulting in the eventual creation of the Manhattan project.

7 This project, spearheaded by Oppenheimer, involved dozens of top scientists, research sites all over the country, and over two billion dollars in funding. After overcoming a few obstacles, the team performed its first test, dubbed "Trinity," in July of 1945 in the desert in New Mexico. The scientists saw a fireball the equivalent of 20 kilotons of TNT. According to reports, Oppenheimer commemorated the historic moment with the words, "It worked." The Allies had beaten the Nazis to developing the most abominable weapon the world had ever seen. Ironically, when the German scientists first learned of the nuclear bombs unleashed on Hiroshima and Nagasaki, they could not believe it. They thought all of the talk about nuclear weapons was just propaganda. They were never even close to developing a nuclear bomb.

1. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) At first, scientists did not study atoms much but later became interested in studying them due to stress from global violence, resulting in the rampant destruction of 1945.
(B) Progress was initially unimpressive but became more and more rapid as war became more widespread, until everything finally resolved in the nuclear bombings of 1945.
(C) The destruction of cities in 1945 was the culmination of a rapidly increasing sentiment in the scientific community against humanity, starting after a period of sluggish initial research.
(D) The nuclear destruction witnessed in 1945 could have been avoided if scientists had not become exceedingly caught up in the rhetoric of war, which is obvious from the pace of earlier work.

2. What can be inferred from paragraph 3 about discovering the power of the atom?

(A) The Nazi government was leading the world in nuclear research in 1938.
(B) Szilárd did not want nuclear weapons to be developed during the war.
(C) The early results on atom splitting were useful only for power generation.
(D) Most scientists were hiding their results from each other at this time.

3. According to paragraph 4, which of the following statements is NOT true?

(A) Uranium-238 is more common than uranium-235.
(B) The critical mass of uranium was not yet known.
(C) Uranium-235 was only found deep underground.
(D) Extraction of uranium-235 was a major obstacle.

4. Why does the writer mention the German scientists' reaction to the nuclear bombs in paragraph 7?

(A) To denounce the theory that Hitler had made plans to drop a bomb on London
(B) To imply that the German scientists were more ethical than the Allied scientists
(C) To repeat the point made previously in the passage with respect to critical masses
(D) To reveal that Allied urgency in developing the bomb was unfounded in retrospect

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

The history of the study of the atom was long and uneventful until finally becoming extremely critical in the years leading up to 1945.

(A) Modern atomic research began with John Dalton in the 1800s and was nearly complete by the early 1930s.
(B) Hungarian Leó Szilárd first saw the potential of the atom but remained silent for political reasons.
(C) Mark Oliphant first succeeded in convincing U.S. scientists and the government to pursue serious nuclear research.
(D) After 1938, Allied scientists struggled to be the first to solve major obstacles to developing nuclear weapons.
(E) In 1945, a large team of scientists in the U.S. detonated the first nuclear bomb, only later to learn the Germans never had one.
(F) After World War II, the U.S. became entangled in a senseless nuclear arms race with the U.S.S.R.

UNIT 44

Nuclear Energy

1 After World War II, the world's leading physicists used government funding to focus their efforts and resources on the use of nuclear fission for the peaceful production of energy. Most of the techniques had already been invented during the race to build a nuclear weapon in the 1930s and 1940s. All that remained was to find the most efficient way to adapt the nuclear chain reaction to civilian power and of course, to develop a system for handling the waste.

2 A team of U.S. physicists lead by Walter Zinn began building the Experimental Breeder Reactor (EBR-I) in 1949 in the desert near Arco, Idaho. The purpose was to test the possibility of producing energy from controlled nuclear chain reactions. In December of 1951, EBR-I successfully produced about 100 KW of power, enough to power four 200W light bulbs. This was the first instance of nuclear energy production in the history of the world.

3 Such nuclear energy production is carried out by firing a beam of neutrons at a fissile material, such as uranium-235 or plutonium-239. The concentration of the fissile material is much lower than in a nuclear weapon. This makes it possible to hold and control the nuclear reaction. The heat in the fissile material is then used to boil large amounts of water. The steam from the water rises into turbines and turns them to produce electricity, just as with traditional energy production.

4 Soon, non-experimental nuclear power plants began operating, such as in Obninsk, U.S.S.R., in 1954, the Calder Hall station in England in 1956, and the Shippingport Reactor in Pennsylvania in 1957. Meanwhile, the original EBR-I facility had to be shut down for repairs because it experienced a nuclear meltdown after an operator error.

5 A nuclear meltdown occurs when the heat in the core exceeds a safety threshold, possibly resulting in contamination of the outside environment with radioactivity or steam explosions. Contrary to popular misconception, a nuclear explosion cannot occur as a result of a meltdown. This is due to the fact that the fissile materials used in energy production are not concentrated enough to produce an uncontrolled chain reaction.

6 The meltdown in EBR-I did not have serious consequences. However, the meltdowns that took place at Three-Mile Island in Pennsylvania and at Chernobyl, in what is today Ukraine, had large effects on public views of nuclear power. The Three-Mile Island disaster, occurring in 1979 was due to a failure in the water lines that cooled the reactor core. There were no major environmental or humanitarian results, but the public's perception of nuclear power was severely damaged.

7 The accident at Chernobyl in 1986 was far worse. It was caused by poor design and communication and inadequate training of the workers. The Chernobyl meltdown hospitalized 200 people, 28 of whom died from radiation poisoning, and spread a cloud of radioactivity from Russia to Ireland. These tragedies, particularly the latter, had a major impact on global perception of nuclear power in the latter part of the twentieth century. In fact, the United States still gets twice as much of its power from coal, which is less efficient and in many ways more damaging to the environment.

8 The other major problem with nuclear power generation is the current inability to handle nuclear waste materials. After fissile material is used to produce heat, it can either be reprocessed for reuse or sent for long-term storage. The ability to reprocess the material is, however, limited, and certain political considerations, such as non-proliferation of nuclear weapons, have led to policies against reprocessing. Fissile material that cannot or will not be processed, called spent fuel, must be kept away from the outside environment for up to 10,000 years to ensure public safety. Although future technological advances may allow this fuel to be reused, the current plan is simply to store 49,000 metric tons of spent fuel under Yucca Mountain in the Nevada desert.

1. Why does the writer introduce discussion of the EBR-I facility in paragraph 2?

(A) To reiterate the theme that nuclear energy is something too powerful to control
(B) To contrast the poor quality of this early station with the modern nuclear plants
(C) To introduce the topics of nuclear power production and nuclear meltdowns
(D) To direct the focus of the passage toward the researchers behind the advances

2. According to paragraph 5, why is a nuclear explosion not possible in a nuclear power plant?

(A) Modern safety precautions rule out the future meltdowns.
(B) In the history of nuclear power, it has never occurred.
(C) Non-proliferation policies are firmly in place.
(D) The concentration of fissile materials is too low.

3. What can be inferred from paragraph 7 about accidents?

(A) The public mistrust of nuclear power largely subsided in the 1990s.
(B) Fortunately, there were few long-term effects from the disaster at Chernobyl.
(C) The accident at Chernobyl was mainly due to the operators, not the designers.
(D) The level of organization at Three-Mile Island was much better than Chernobyl.

4. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) Unfortunately, reprocessing cannot be carried out indefinitely and has been avoided for other reasons, such as discouraging production of nuclear weapons.
(B) In spite of this, reprocessing cannot be performed on all materials because of political risks, such as the creation of a spontaneous nuclear explosion.
(C) Nevertheless, if governments fail to place restrictions on waste product reprocessing, then there is no way of preventing other nations from developing nuclear weapons.
(D) If reprocessing can gain enough political support, it has the power to eventually separate the risk of another cold war from the peaceful production of energy.

5. Complete the table below to summarize the information about nuclear power discussed in the passage. Match the appropriate statements to the one with which they are associated. Two of the statements will NOT be used.

Nuclear Power Issue	Statements
Meltdown	**Select 3** • • •
Waste	**Select 2** • •

(A) Contributed to negative public perceptions in the late twentieth century
(B) Responsible for destruction of wetlands and animal species living there
(C) Causes problems when core heat exceeds the safety threshold
(D) Persists for up to 10,000 years
(E) Current proposals involve the Yucca Mountain ridge in Nevada
(F) Involves the death of 28 people from radiation
(G) Involves application of heavier plutonium-239 in lieu of uranium-235

UNIT 45

The Solar System

1 Though many objects in the solar system such as the planets from Mercury to Neptune and the Sun have been known since antiquity, the story of the solar system, its history, formation, and structure, have only become well understood in the last century or so. Today, scientists have hypothesized a variety of strange new objects and phenomena. These range from new planets and moons to giant clouds of ice. Further, they can now trace the story billions of years into the past and predict events into the future.

2 The story begins over four and a half billion years ago when bits of matter left over from explosions of former stars began to accrete and condense into a disc in space. This cloud of molecules was probably several light years in diameter, a part of which, now called the pre-solar nebula, began to solidify into a smaller cloud. This nebula got increasingly dense, hot, and flat and rotated faster and faster. The area in the center formed into a protostar. This stage of development is referred to as the protoplanetary disc. Eventually, the protostar in the center would have enough density of hydrogen to begin thermonuclear fusion and generation of energy, thus birthing the sun.

3 Before this occurred, however, the bits of matter rotating around the center would slowly combine at the rate of a few inches a year from tiny specks up to the size of the modern planets over a period of several million years. These developing planets are called planetesimals. Once the Sun began producing energy and became a true star, it began spewing a rain of particles out into space, known as the solar wind, which inhibited any further growth of the planets. The sun still emits this harsh radiation today, which is so powerful that it blasts the atmospheres of planets like Mars and Mercury out into space. Fortunately, the Earth's magnetic field protects it from the solar wind and conserves our atmosphere. Some theories purport that the solar wind similarly protects our solar system from the cosmic rays that permeate interstellar space.

4 The heat of the Sun allowed denser elements such as metals to form in the inner part of the protoplanetary disc. Therefore, the inner planets, from Mercury to Mars, are much smaller and rockier. The asteroid belt is a field of rocky debris between Mars and Jupiter that marks the boundary between the inner and outer solar systems. According to the prevalent theory, the asteroid belt formed because Jupiter's gravity was too strong for that ring of the disc to clump together and form a planet.

5 The colder outer regions of the solar system produced enormous planets composed of gas or ice; gas giants are Jupiter and Saturn, and ice giants include Uranus and Neptune. Jupiter is, in fact, so large that some contend it was almost big enough to have formed as a twin star with the Sun. Whereas Jupiter and Saturn were known to the ancients, Uranus and Neptune were not identified as planets until the modern era.

6 Beyond Neptune lies another vast field of debris composed mainly of rock and ice known as the Kuiper belt. The brightest object in the Kuiper belt is the dwarf planet Pluto. It was classified as a planet for dozens of years until a strict formal definition of planet was formulated in 2006 by the International Astronomical Union. Other dwarf planets in the Kuiper belt include Pluto's twin, Charon, and the dwarf planet Eris, which is actually larger than Pluto but was never considered a planet due to its late detection. The Kuiper belt is also believed to be a possible source of short-period comets, whose cycles are less than 200 years. Long-period comets are believed to come from a hypothetical region of icy objects known as the Oort cloud, extending some 50,000 times further out from the Sun than the Earth's orbit.

7 Officially, the solar system does not end before the Sun's gravitational field. This distance is around halfway to the nearest stars or two and a half times the distance of the Oort cloud. Very little is currently known about this region of space, and it may well turn out that much more will be written on the story of the solar system.

1. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) In anticipation, the rest of the solar system swelled several inches a year for millions of years, until each unit was as big as Jupiter, before going back to normal size again.
(B) Nevertheless, this did not happen until the Sun had collected the other small bits of matter, a few inches at a time over millions of years, until it was bigger than the planets.
(C) However, prior to this, the central matter coalesced for millions of year, from a ball just a few inches in diameter, up to the size of a planet, until it finally formed the Earth.
(D) Yet the minute bits in the rest of the disc were joining together, growing just a few inches a year for millions of years, until they were as big as planets.

2. According to paragraph 4, what caused the inner planets to be much smaller and rockier?

(A) Naturally occurring stellar elements
(B) Heat due to the Sun's proximity
(C) Strain from the Earth's magnetic field
(D) Pressure from the rotational constant

3. Why does the writer mention the theory that Jupiter was almost formed as a twin star in paragraph 5?

(A) To emphasize to the reader the magnitude of the gas giant's size
(B) To point out that the Sun is not actually as unique as was once thought
(C) To argue that Jupiter should not really be considered a planet anymore
(D) To cast doubt on the gravitational theory of the asteroid belt's development

4. What can be inferred from paragraph 6 about dwarf planets?

(A) There was no strict formal definition of planet prior to 2006.
(B) Pluto is the largest known object in the region of the Kuiper belt.
(C) The Oort cloud has been directly observed by powerful telescopes.
(D) The dwarf planet Eris is closer to the sun than Pluto or Charon.

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

The story of the solar system goes back billions of years and is, in fact, still being discovered.

(A) The Big Bang marked the beginning of the universe and created all energy and matter.
(B) The solar system formed billions of years ago when a nebula slowly condensed into the Sun and planets.
(C) Luckily, Earth's magnetic field protects its atmosphere from the harsh solar wind that destroys other atmospheres.
(D) The inner planets are small and rocky, and the outer planets are huge bodies of gas and ice.
(E) Beyond Neptune, the Kuiper belt contains dwarf planets and some comets, and the Oort cloud may contain other comets.
(F) The Sun's gravitational field extends halfway out to the nearest stars and marks a firm boundary for the edge of the solar system.

UNIT 46

Comets and Meteors

1 It was the ancient Greek thinker, Aristotle, who is the first on record to use the term kometes, derived from the Greek word for hair and today shortened to comet, to refer to what appeared to be a star with a head of hair. Aristotle's view of comets, however, is now known to be quite incorrect. He theorized that comets were just a kind of meteora, which back then meant simply phenomena in the upper atmosphere. His reasoning was that comets must not be related to planets because, unlike planets, they can be in any part of the sky. In fact, he also clumped the Northern Lights, the entire Milky Way galaxy, and the things we now refer to as meteors under the category of meteora.

2 Of course, today the word meteor is specifically used to describe a rock from space that attempts to enter the Earth's atmosphere, previously referred to by the folk names shooting star or simply fireball. More specifically, a meteor is a space rock that is in the process of entering the Earth's atmosphere. The term meteoroid is used for one that has not yet entered the Earth's atmosphere, and the term meteorite for one that has landed on Earth. Of course, most meteors do not become meteorites because they burn up entirely when entering the Earth's atmosphere. We still perceive the general sense of the word meteor as any atmospheric phenomenon in words such as meteorology.

3 In a sense, it is understandable that comets and meteors were confused for a long time. The mystery surrounding comets first began to unravel in 1577 when an unusually bright comet appeared in the northern hemisphere for months on end. The Danish Astronomer, Tycho Brahe, who had the most accurate observational instruments of his time, used data gathered alone and those collected by other observers to calculate that the comet must be at least four times the distance of the moon. This was the first solid counterexample to Aristotle's theory, which was then nearly 2,000 years old.

4 What ensued was a century of rampant speculation as to the nature of a comet's path. Some famous astronomers of the day conjectured that comets must travel along elliptical, or curved, paths. Others such as Kepler and Huygens contended that they must move in straight lines. Still others, such as Galileo, obstinately clung to the Aristotelian theory. They would all have to wait until a bright comet was detected by German astronomer Gottfried Kirch in 1680. This time, enthusiasts throughout Europe were able to track its movement and collect more precise observational data. In 1681, a German pastor named Samuel Doerfel provided mathematical formulae demonstrating that comets move in a curved shape known as.a parabola.

5 Taking this comet as an example, Isaac Newton then published his method for calculating a parabolic orbit from the movement of a comet across the sky. This method turned out to be extremely useful, particularly to one Edmond Halley. Halley applied Newton's technique to two dozen comets that appeared at regular intervals between the years 1337 and 1698. Halley argued that all of these comets were actually the exact same comet that was leaving and returning again at regular intervals. He calculated that it would return again in the year 1758 or 1759. What is now called Halley's Comet does, in fact, return every 75 to 76 years and will make its next pass in the year 2061.

6 This discovery inspired a flurry of attempts to link multiple appearances of the past with single comets, many of which were incorrect. Nevertheless, by 1900, the number of comets that have made multiple passes in the solar system stood at 17. Today, this number has been pushed as high as 175, though some of these have, in fact, been annihilated.

7 This new notion of comets seemed to pose a slight inconsistency. How could comets have existed for billions of years in the solar system, yet not have been completely destroyed long ago when passing near the Sun? The answer came in 1950 when Dutch astronomer, Jan Hendrik Oort, proposed a large cloud of ice surrounding the solar system that replenishes comets. Currently, this Oort cloud, though not yet directly observed, is a generally accepted theory.

1. Why does the writer mention the meaning of meteora in ancient Greece in paragraph 1?

(A) To expose the reader to the beauty and elegance of an important language
(B) To highlight the significance of this theory in the understanding of the cosmos
(C) To prevent confusion with the modern use of the word derived from it
(D) To introduce the concept of the upper atmosphere for determining orbits

2. According to paragraph 2, which sequence is chronologically correct?

(A) Meteor, meteorite, meteoroid
(B) Meteorite, meteoroid, meteor
(C) Meteor, meteoroid, meteorite
(D) Meteoroid, meteor, meteorite

3. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) Brahe, the great astronomer from Denmark, invited other scientists to use his superb telescopes, and working together, they were able to prove that the comet had to be four times as far away as the moon.
(B) With the best detection devices, Danish scientist Tycho Brahe, used the information he had acquired, in conjunction with that of others, to determine that the comet must be much further away than the Earth's atmosphere.
(C) Dane Tycho Brahe took advantage of his excellent scientific equipment to collect extremely precise data on the comet, as well as other comets, which enabled him to prove that the comet was much further away than even the moon itself.
(D) The comet was calculated to be located well beyond the moon by Brahe, the Danish astronomer, who had borrowed the best astronomical instruments of the day from colleagues all over Europe.

4. What can be inferred from paragraph 6 about comets?

(A) Astronomical record keeping of comets started in Europe in the 1300s.
(B) Many modern comets were once many smaller comets that combined.
(C) The vast majority of comets only come once and are burned by the Sun.
(D) Most of the regularly returning comets can only be seen with special instruments.

5. Complete the table below to summarize the information about theories discussed in the passage. Match the appropriate statements to the one with which they are associated. Two of the statements will NOT be used.

Theories	Statements
Aristotle	**Select 3** • • •
Modern	**Select 2** • •

(A) Comets cannot be destroyed, but can break up into other comets.
(B) Comets come from a cloud of ice that has never been seen.
(C) Comets move in a curved line called a parabola.
(D) Comets are phenomena occurring in the upper atmosphere.
(E) Comets get their unique shape from the angle of the sun's heat.
(F) Comets are classified in a group with the Northern Lights and Milky Way.
(G) Comets can occur anywhere in the sky.

UNIT
47

The Constellations

1 A common anthropological assertion is that in the prehistoric age, when paleolithic humans roamed the Earth, hunting, gathering, and building fires, the night sky itself was the television, where people would trace images and spin the stories that permeated the primeval collective unconscious. In addition to entertainment and folklore, these images would serve as reference points so that people could find their way when traveling at night.

2 Though we know that the constellations stem from a very ancient tradition, some aspects stretching as far back as Babylon, and most solidified by the ancient Greeks and Romans, it can also be noted that there is no single universal system of grouping the stars into figures. The ancient Chinese, in fact, had developed an entirely distinct system of constellations based on the movements of the Moon rather than the Sun. They interestingly divided the sky into three enclosures, or *yuán*, and 28 mansions, or *xiù*. For instance, the stars in the Greek tradition's Cancer (the crab) form the *guǐ* (demon or ghost) in the Chinese tradition.

3 Yet the images do not only vary across different traditions, but also chronologically within the same tradition. For example, the North American Big Dipper (ladle) constellation is the Plough in England and the wagon in many northern European countries. It was called the Great Bear in ancient Greece and Rome, as indicated in its modern scientific name *Ursa Major*. This constellation is one of the most easily recognized in the northern hemisphere and appears on the flag of the state of Alaska along with the North Star.

4 Another well-known constellation is the hunter, Orion, readily detected from the row of three stars that form his belt. According to Greek legend, Artemis, the moon goddess of the hunt, fell in love with Orion. She became so enamored that she stopped lighting up the night sky. Apollo, her brother, tricked her into killing Orion with an arrow. She was so incredibly grief-stricken that she put his body in the night sky. In another version, Apollo summons Scorpio, the scorpion, to kill Orion, which is meant to explain why the constellation Scorpio never appears at the same time as Orion.

5 Cassiopeia can also be easily espied in the northern hemisphere, appearing as a giant W or sometimes as an M. Greek legend tells of the conceited Phoenician queen, Cassiopeia, who boasted of her own beauty. As punishment, Poseidon, the sea god, banished her to the heavens in such a way that she would be upside-down half of the time.

6 Exactly opposite of the constellation Cassiopeia is the most popular constellation of the southern hemisphere, the Southern Cross (*Crux Australis*). It includes four stars in the shape of a cross, with an extra fifth star just below and to the right of center. Not always visible from the northern hemisphere, it was somewhat known to the ancient Greeks, who grouped it as part of the Centaur. However, when Europeans initiated exploration of the southern hemisphere in the sixteenth and seventeenth centuries, they reclassified it as a separate constellation. Like the Big Dipper, it also took on many forms for different cultures. For the aboriginal Australians, it was the opossum. For the Maori tribe of New Zealand, it was the anchor. For the Tongans, it was a wounded duck flying south. Today, the Southern Cross appears on the flags of Australia, New Zealand, Brazil, Samoa, and Papua New Guinea. Just as the Big Dipper can be used to find the North Star, the Southern Cross can be used to locate the south celestial pole.

7 Oddly, the different stars making up a constellation are typically unrelated to each other and may even be located in completely diffuse parts of space. On reflection, this makes sense, since their distances and angles are particular to people's perspective here on Earth.

8 In 1930, Belgian astronomer Eugène Delporte delineated the modern celestial maps into the official constellations used by scientists today and currently endorsed by the International Astronomical Union. The total number of constellations is 88, with every possible location in the sky falling within the boundaries of a constellation.

1. Why does the writer mention *guǐ*, the Chinese demon constellation, in paragraph 2?

(A) To distinguish between the notions of *yuán* (enclosure) and *xiù* (mansion)
(B) To elaborate the idea of a constellation as an explanatory mythological tool
(C) To provide an example to support a claim made earlier in the same paragraph
(D) To refute a controversial position to be introduced subsequently in the passage

2. What can be inferred from paragraph 3 about constellations?

(A) Constellations are typically reorganized once every 500 years.
(B) *Ursa Major* meant Great Bear in the language of Romans or Greeks.
(C) The North Star is one of the stars in the Big Dipper constellation.
(D) The Americans got the name Big Dipper from a Native American legend.

3. According to the paragraph 6, what was not a historical image for the Southern Cross?

(A) A possum
(B) A diamond
(C) A duck
(D) An anchor

4. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) Today's modern scientific constellations, as sanctioned by the International Astronomical Union, were originally demarcated by Eugène Delporte, the Belgian astronomer, in 1930.
(B) In 1930, Eugène Delporte of Belgium was the first astronomer to create a map with all 88 modern constellations, all previous maps having been rejected by the International Astronomical Union.
(C) The International Astronomical Union, the ultimate authority on all Astronomical issues, recently officially recognized the star maps created by Belgian astronomer Eugène Delporte in the year 1930.
(D) Though many scientific alternatives exist, the official International Astronomical Union system of constellations was first developed by Eugène Delporte in his laboratory in Belgium in 1930.

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

Constellations were not only useful reference points, but also channels to transmit cultural stories and are still used by scientists today.

(A) Systems and images of constellations have varied both from place to place and from time to time.
(B) The ancient Chinese had a system that was based on the Moon rather than the Sun and had three enclosures and 28 mansions.
(C) The Big Dipper has been known by many names, such as the plough and the wagon, and even appears on the Alaskan flag.
(D) Some common constellations, such as the Big Dipper, Orion, Cassiopeia, and the Southern Cross, have interesting stories or cultural significance.
(E) Belgian Astronomer Eugène Delporte is responsible for the star maps and constellations that are still in use today.
(F) Although it is known today that there is little true spatial relationship between the stars in a constellation, there is an official system dividing the sky into 88 of them.

UNIT 48

The Hubble Telescope

1 Many people may have once seen a famous photograph that appeared to be of the night sky filled with dozens of multicolored stars, but by looking closely, the stars are actually tiny spirals, discs, and clouds. Perhaps then, viewers read the caption and realize the items are really galaxies! This photo, called the Hubble Ultra Deep Field (HUDF), was taken by the Hubble space telescope. It is the most detailed visible light image ever taken of the universe, containing around 10,000 galaxies and traveling up to 13 billion years back in time. Though the costs of the Hubble telescope have been daunting, many members of public cannot help but agree that the HUDF image alone is priceless.

2 The telescope was named for Edward Hubble, the astronomer who first figured out that the universe was growing, but it was the brain child of a theoretical physicist, Lyman Spitzer. Spitzer dedicated a large part of his career to convincing scientists, and most importantly Congress, that placing a telescope in outer space would have two crucial benefits. The first was that it would be able to view objects without distortions caused by the Earth's atmosphere. The second was that it would be able to see much of the radiation that is naturally blocked by the ozone later.

3 After astronomers began intense letter-writing campaigns to the general public, Congress agreed to provide some funding for the telescope. The National Aeronautics and Space Administration (NASA) made a deal with the European Space Agency (ESA), to allot their agency 15 percent of its observation time in exchange for solar panels and other funding. Hubble's launch was originally scheduled for 1983, but an array of delays required the launch date to be pushed back to October of 1986.

4 Unfortunately, the space shuttle *Challenger* burned on re-entry in 1986, which shut down the U.S. space program for the next two years. This meant the Hubble space telescope had to be stored in special clean rooms during this time, further raising its budget. Finally, in April of 1990, the space shuttle *Discovery* set the telescope in its orbit around the Earth.

5 Yet this temporary success would soon be marred with mishap. The telescope's main mirror had been constructed improperly and was blurring the images. After lengthy investigations, it was revealed that the company in charge of constructing the mirror had knowingly neglected quality standards, producing the mirror in a shape that was off by two micrometers. A solution was not immediately forthcoming. NASA did have a backup mirror. However, it could neither replace the huge mirror in orbit nor suffer the expense of bringing the Hubble back to Earth for maintenance.

6 It was decided, then, to fix the problem by designing and installing extra devices to correct the light for the mirror—spectacles, in a sense. These devices, called COSTAR, were installed in 1993 by a team of seven intensively trained astronauts. This mission was one of the most harrowing ever undertaken by NASA and was completed with total success. The result has been over 10 years worth of dazzling new images of never-before-seen corners of the universe.

7 The information provided by the Hubble has led to many new astronomical discoveries and insights. Among these, it is now known that not only is the universe expanding, but also that the rate at which it is expanding is increasing for a yet-unhypothesized reason. It has also confirmed that most galaxies do appear to have black holes at their centers, and that the mass of the black hole correlates with the properties of the galaxy. It has also helped find extra-solar planets. Many of the more breathtaking images are available to the public online via the Hubble Heritage Project.

8 A series of technical failures are currently threatening the usability of the Hubble. Further, the *Columbia* space shuttle disaster in 2003 resulted in changes to NASA's safety policies, which precluded future manned missions to the Hubble. Without manned repairs, Hubble will be lost forever within three to 25 years. Thanks to public and congressional appeal, NASA has reversed this policy and scheduled a repair mission, to be undertaken by shuttle *Atlantis* on September 11, 2008.

1. According to paragraph 2, what is one benefit of a space telescope?

(A) Decreased wear resulting from wind friction
(B) Lack of distortions caused by atmosphere
(C) Greater maneuverability and pivoting
(D) Increased proximity to celestial bodies

2. Why does the writer mention the *Challenger* disaster in paragraph 4?

(A) To state the cause of the continued delay of the Hubble launch
(B) To contrast it with the reaction to the *Columbia* disaster in 2003
(C) To emphasize the emotional factors surrounding this period of time
(D) To clarify the position of Congress toward the overall Hubble project

3. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) Experiments conducted on the length of the mirror showed that the company that built it had acted negligently and without regard to standards, thus erring by two micrometers.
(B) After extensive questioning, the company that produced the mirror admitted its knowledge of the substandard quality of the mirror, resulting in images blurred by as much as two micrometers.
(C) It was eventually discovered that the NASA team that designed the mirror had used improper calibration tools, resulting in a mirror that was off by a tiny yet critical length of two micrometers.
(D) According to results of a long study, the construction firm to whom the mirror was contracted had purposely violated quality standards, skewing the dimensions by two micrometers.

4. What can be inferred from paragraph 7 about scientific discoveries?

(A) The telescope helped calculate the end of the universe's expansion.
(B) Hubble's scientific data are all available to the general public online.
(C) Scientists had suspected that galaxies have black holes at the centers.
(D) Many black holes are thought to be larger than their partner galaxies.

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

The Hubble telescope, though costly and fraught with difficulties, has produced images of immeasurable value and incomparable scientific knowledge.

(A) Spitzer successfully argued that a space telescope was critical and garnered adequate public and congressional support for its construction.
(B) The European Space Agency agreed to provide solar panels and additional aid in exchange for 15 percent of the Hubble's viewing time.
(C) After two years of storage in special rooms, the Hubble was finally put into orbit by the shuttle *Discovery* in 1990.
(D) The mirror problem was finally solved by designing and building special corrective lenses, which were installed by a team of seven astronauts in 1993.
(E) The Hubble suffered from numerous delays and a flawed mirror but was eventually fully operational.
(F) After many images and discoveries, the Hubble was going to be lost until public support pressured NASA into scheduling another repair mission.

SECTION 4

Business

PART A | Business Icons

unit 49 Donald Trump
unit 50 Estée Lauder
unit 51 Richard Branson
unit 52 Oprah Winfrey

PART B | Management

unit 53 Leadership and Management
unit 54 Corporate Ethics
unit 55 Mergers and Monopoly
unit 56 Business Partnerships

PART C | Business Communication

unit 57 Office Communication
unit 58 Presentations, Seminars, and Conferences
unit 59 Successful Communication in the Business World
unit 60 Human Resources

PART D | Advertising and Finance

unit 61 The World of Advertising
unit 62 The Stock Market
unit 63 *The Wall Street Journal*
unit 64 Currency and Banking

UNIT 49

Donald Trump

1 Generally, when people become famous, they become rich as well, but it is rare for people to become famous just because they are rich. Donald Trump is an exception. He is a household name not because he stars in Hollywood movies or puts out platinum albums, but because he is rich. He is a successful businessman who made his fortune in real estate development, and while there are not many celebrity real-estate investors, Trump has become a cultural icon by virtue of his money. Although he now stars in a reality television show and has made cameos in several Hollywood movies and written several books, these are not the works that made him famous. His Manhattan skyscrapers, tremendous wealth, and the fame that they bought him are what allowed him to become an icon.

2 After studying economics at the Wharton School of the University of Pennsylvania, Trump went to work in his father's real estate company. He was dealing with middle-class housing, and while the trend at the time was to lower prices during an economic lull, Trump went his own way and raised prices. This proved to be a successful strategy because it promoted the property to wealthy buyers. He took an apartment complex in Ohio that was falling apart and had only about 66 percent of its apartments rented, fixed it up, and remarketed it to wealthy people. The company made a six-million-dollar profit on the venture. Trump figured out early on that if he wanted to really get rich in real estate, he would have to go where the money was, and so he left his father's company and went to Manhattan.

3 The 1970s saw an economic recession, which makes it all the more impressive that Trump made his fortune during this time. Like all good entrepreneurs, he looked for and found opportunity in a seemingly unfavorable situation. The New York City municipal government was trying to attract investors by offering tax concessions, and Donald Trump took advantage of their policy. He bought the Commodore Hotel for 10 million dollars, did extensive renovations on it and sold stakes in it to the Hyatt, a major hotel chain. By 1980, he had turned an eyesore into a five-star hotel and made a name for himself in doing so.

4 Trump's next major project was to build a residential skyscraper in Manhattan that would attract attention and gain him prestige and recognition. Trump Tower is a 58-story skyscraper that is home to many celebrities, houses retail stores, and is the first of a series of architecturally impressive buildings that would bear the Trump name. He then bought another dilapidated high rise and a hotel with the hopes of tearing down the skyscraper to build a new one. The tenants of the building, however, were less than enthusiastic about the idea and opposed it. Instead, he renovated the hotel and renamed it Trump Park and continued to buy and restore buildings in Manhattan.

5 When gambling was legalized in New Jersey in 1977, Trump recognized another money-making opportunity. He started buying property in Atlantic City and taking preliminary measures for opening a casino. He entered into a partnership with Holiday Inn, which he later bought out after opening a casino originally called Harrah's at Trump Plaza but renamed Trump Plaza Hotel and Casino. He then expanded his casino empire by purchasing Hilton Hotel's casino and renaming it Trump's Castle. Finally, he was able to acquire Taj Mahal which was, at the time, the largest hotel-casino in the world.

6 In order to build his empire, Trump incurred a lot of debt, and when the real estate market took a downward turn in the 80s, he found himself unable to make payments. He was facing bankruptcy and lost much of his property in order to restructure his debts. While his net worth diminished considerably, he was not in the poor house. He was offered a bailout that allowed him to retain control of much of his empire, and in time, when the market turned around, he made a comeback. Today, Donald Trump is again worth billions and is even more famous as a TV personality on his reality television show, *The Apprentice*.

1. Why does the writer mention that when people become famous, they become rich as well, but it is rare for people to become famous just because they are rich in paragraph 1?

(A) To point out that some celebrities do not deserve to be rich
(B) To support the argument that fame leads to wealth
(C) To introduce the subject by showing how he is unique
(D) To introduce the topic of unusual celebrities by using an example

2. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) While most celebrities are famous because of their real-estate investments, Trump is famous because of his money.
(B) Trump is unusual since he became famous because of his fortune, which he made from real-estate development.
(C) Trump owes his fortune more to some lucky real-estate investments and developments than his own business savvy.
(D) The secret to Trump's success lies not just in his real-estate investments but also on his status as a cultural icon.

3. What can be inferred from paragraph 2 about Trump?

(A) He was a risk taker.
(B) He was a conformist.
(C) He cared about people.
(D) He appreciated art.

4. According to paragraph 3, what was Trump's first major project after he left his father's company?

(A) Trump Tower
(B) Trump Park
(C) The Commodore Hotel
(D) Taj Mahal

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

Donald Trump made his fortune in real estate and became a celebrity because of his wealth.

(A) He got his start in real estate in his father's company.
(B) His success is due to his willingness to take risks and to go against conventional wisdom.
(C) He would either restore dilapidated buildings or tear them down to make new ones in Manhattan.
(D) He lost a great deal of money due to a gambling problem which he developed when gambling became legal in New Jersey.
(E) He got out of debt by starring in a reality television series called *The Apprentice*.
(F) Despite a period of financial difficulties, he made a comeback and is now a billionaire.

UNIT

50

Estée Lauder

1 The absolutely amazing success of Estée Lauder can be attributed not just to its superior cosmetic products but also to the innovative marketing style of its founder, after whom it was named. Estée Lauder knew her clientele, and she knew how to sell her products to that population. Today, it is common practice at cosmetic counters to offer free makeup demonstrations, distribute free samples, and give gifts with purchases; it was Estée Lauder who devised these ingenious ideas. Free samples not only provide potential customers a chance to try the product, they also prove that the seller has the utmost confidence in it by saying, "We are so sure you will like our product; we're going to let you try it for free."

2 Lauder became involved in cosmetics through her uncle, a chemist. He concocted a skin cream that Lauder experimented with and perfected during her teenage years by altering the formula and attempting new variations on herself, her family, and her friends in their middle-class Queens, New York, home. In 1930, she married Joseph Lauder and gave birth to a son a few years later, but she continued to develop her cosmetics and initiated a selling campaign for her products in Manhattan. She confidently approached a beauty salon and inquired if she could give free makeup demonstrations to the salon's clientele, and the owner agreed. Thus, she began giving women free makeovers while they had their hair done. Most became regular, loyal buyers of Estée Lauder.

3 In 1939, Lauder divorced her husband because, as she later explained, she regretted getting married at such a young age. As a single woman, she relocated to Miami to sell her products to wealthy vacationers. Again, Lauder capitalized on her prior knowledge; she knew how to market to women, and she started a campaign called "Tell a Woman." The marketing campaign brilliantly encouraged her Miami clients to tell a friend about her product. Because these women were on vacation at the time, they would then be telling friends all over the United States, so Lauder built up a national reputation that not only cost very little, but also worked. After three years, Estée remarried her ex-husband, and they went into business together; in 1946, Estée Lauder Companies, Inc. was founded.

4 Estée and Joseph bought a restaurant and converted it into a factory to create their cosmetics. They were the only two employees of the company, and together they cooked, bottled, and distributed the creams. Joseph was in charge of managing the finances, and Estée continued to strategize marketing campaigns. She realized that in order to turn Estée Lauder into a major company, they would need a bigger distributor. She aggressively marketed her products to major department stores, and finally in 1948, she attained a portion of counter space at Saks Fifth Avenue. This was only the beginning as other major department stores picked up the line soon after, and Estée Lauder became an exclusive line because it was only available at the top department stores.

5 For the first time, Estée would not be responsible for selling her own product; instead, she managed a sales team, but she personally trained every person who would be selling her product with her proven sales method. Whenever a new Estée Lauder display opened, she traveled to the opening and trained the sales force. During this time, she began a campaign structured to give customers a free gift with purchase, and she initiated a mail campaign for free samples. These strategies attracted a huge clientele and put Estée Lauder way ahead of the competition, which soon had to follow suit.

6 While her competitors could borrow her marketing ideas, Estée made sure they could not steal her formula. As the business grew, of course, she had to hire others to make the creams and lotions. This could be dangerous because a spy could be sent in from the competition disguised as a worker, and that worker could find out the formula. To safeguard the formulas, Estée came up with a system that would guarantee no one could ever find out how to make them. One ingredient was kept a family secret, and it was always a family member who added the secret ingredient. The only way the secret could get out would be if a family member gave it away, which was not in their interest to do.

1. In paragraph 1, which of the following was not mentioned as a common marketing strategy of cosmetic lines that was pioneered by Estée Lauder?

(A) Makeup demonstrations
(B) Free samples
(C) Beautiful models wearing the product
(D) Gift giveaways with purchase

2. What can be inferred from paragraph 2 about Estée Lauder?

(A) She overcame tremendous adversity to become the richest woman in the U.S.
(B) She was not confined by her society's expectations of women.
(C) She put her career ahead of her family.
(D) She had connections in Manhattan.

3. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) Lauder's campaign was based on the assumption that vacationers are rich and so are their friends.
(B) Lauder's campaign was inexpensive and effective because vacationers spread the word around the nation.
(C) Lauder's products speak for themselves, but having clients spread the word about them helped.
(D) Lauder's marketing campaign attracted vacationers at a national level making her product well-known.

4. Why does the writer mention the secret ingredient of Estée Lauder products in paragraph 6?

(A) To show why they have a monopoly on the cosmetics industry
(B) To demonstrate how paranoid Estée Lauder really was
(C) To imply that Estée Lauder used unethical business practices
(D) To show how Estée Lauder protected her company from the competition

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

Estée Lauder became one of the top cosmetic lines because of the hard work and innovative marketing ideas of its founder.

(A) Free samples and makeup demonstrations were the secret to her success.
(B) It was difficult for Lauder to juggle her family and career, so she divorced her husband to focus on her work.
(C) For years, she worked at perfecting the product and marketing it to rich women.
(D) Her big break came when a major department store picked up her line.
(E) Her husband took care of the financing so that she could focus on marketing.
(F) Estée Lauder has gone on to become one of the top cosmetic lines in the world.

UNIT

51

Richard Branson

1 Richard Branson's life story is an inspiring rags-to-riches tale. This self-made billionaire decided at age 16 to drop out of school after struggling for years with dyslexia during a time when little was known about the learning disability. He also failed to function well in the highly restrictive environment of a school that demanded submission to authority. Young Branson was a budding entrepreneur, having already tried his hand at growing Christmas trees and raising budgie birds, also known as parakeets. While these entrepreneurial ventures were not a tremendous success, Branson persevered. Upon dropping out of school, he moved to London in order to start his business career after his headmaster predicted that he would either find himself imprisoned, or he would become a millionaire.

2 The first venture Branson would undertake was to start a magazine called *Student* in 1966, which became quite successful, and as editor, he had the chance to interview such celebrities as John Lennon and Vanessa Redgrave. Branson also became extremely involved in charity work early in his career, founding the Student Valley Center for troubled youths. In 1970, Branson sold *Student* and became involved in the record industry. He started by traveling to France and buying discounted records, which he brought back to England to sell out of the trunk of his car to record stores. He later converted it into a mail-order company called Virgin Mail. He eventually opened a record shop, which greatly expanded into 14 record shops before he was unexpectedly charged with tax evasion. In time, however, he managed to pay his back-taxes in addition to the business debt he had accrued thus far and was ready to start his next venture.

3 Branson purchased a castle and developed part of it into a large recording studio, where his friend, Mike Oldfield, cut a huge hit album. This was the birth of Virgin Records, an independent label which earned a reputation for taking chances on controversial artists. The main record companies would not be interested in them because of their controversial lyrics. Branson's decision to sign one particular band turned out to be a brilliant business move because the band generated a great deal of publicity. Their song, *God Save the Queen,* was banned on the airwaves, and the group, in protest, gave a free concert on the Thames River, which generated phenomenal sales as well as recognition for Virgin Records. The label went on to sign such stars as the Culture Club and the Rolling Stones before Branson took the label to the United States with Virgin American.

4 Having earned huge success in the music industry, Branson was ready to move on to new things. Over the years, the Virgin name has been attached to a film and video distribution company, a computer games publisher, a clothing line, a cola soft drink, and an international airline, to name a few. These were all independent ventures, but Branson oversaw their startups. Today, Virgin is more than a company; rather, it is a brand name utilized by a multitude of companies. Branson retains the rights to the brand name, Virgin, and he maintains some controlling interest in all Virgin ventures, but the companies which use the name are essentially separate entities.

5 Branson's personality lent itself well to business as he was adventurous and not afraid to take risks. As a nonconformist, he had no qualms about signing artists to Virgin Records who were not mainstream and even a bit controversial. He cares about more than just the bottom line, which is why he goes against the advice of his accountants and keeps all of the companies small; he wants all of the employees to be happy and for their jobs to be secure. When financial circumstances lead most companies to lay people off, Branson instead convinces some of them to go on sabbatical. He prefers to keep business informal and never holds meetings, opting instead for conferring over the phone when necessary. As he puts it, it is simply more fun to work for a small company.

1. Why does the writer mention Branson's headmaster's prediction in paragraph 1?

(A) To show that quitting school was a mistake because most dropouts end up as criminals
(B) To emphasize the prejudice experienced by high school dropouts and how it can sometimes be unwarranted
(C) To imply that Branson's headmaster did not understand him and did not provide proper guidance
(D) To demonstrate how it was the traits that made him a poor student that also made him a good entrepreneur

2. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) Branson's first success was the magazine *Student*, which provided the opportunity for him to interview famous people while he was the editor.
(B) Branson's first magazine was called *Student*, and it allowed him to get involved in the music industry as he met many musicians.
(C) After a series of failed ventures, Branson finally had a success with *Student*, the magazine for which he did interviews.
(D) It was working for his school newspaper, *Student*, that inspired Branson to become an editor and interviewer.

3. In paragraph 4, which of the following was not mentioned as products that are associated with Virgin?

(A) Soft drinks
(B) Magazines
(C) Clothing
(D) Computer games

4. What can be inferred from paragraph 5 about Branson?

(A) His unconventional ways keep his profits lower than they could be.
(B) Making money is more important to him than enjoying himself.
(C) His unconventional ways are what makes him a good businessman.
(D) He prefers business meetings to be informal and relaxed.

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

Richard Branson was not a model student, and he dropped out of school to become an entrepreneur.

(A) After publishing a magazine for a while, he got into the record business.
(B) Branson succeeded at every venture he undertook.
(C) He was so successful that he moved into various other industries.
(D) Virgin Records, which started in the trunk of Branson's car, is today the world's top record company.
(E) Today, Virgin is associated with many different products, each of which is produced by a small, independently run company.
(F) Branson has employed a lot of people and is an excellent boss.

UNIT 52

Oprah Winfrey

1 After humble beginnings, Oprah Winfrey overcame adversity and is now one of the most influential women in the world. An African-American woman from a poor family, Winfrey had to beat prejudice and lack of opportunity in order to make her way. She is mainly known for her talk show, the *Oprah Winfrey Show,* which has been on the air for over 20 years and enjoys higher ratings than any other talk show. She has also starred in Hollywood movies, published a magazine, and been said to now be worth one and a half billion dollars. What makes Winfrey unique in the world of millionaires and billionaires is that she did not try to be rich; rather, she set out to be good at what she did and then she became rich because of her talent.

2 Until the age of six, Winfrey was raised by her grandmother in rural, poverty-stricken Mississippi. Her grandmother used a switch to discipline young Winfrey and taught her to read at a young age. Winfrey was known for reciting verses from the Bible and spent playtime pretending to interview her toys. She gained a strong foundation in her grandmother's care, but at age six she went to live with her mother in the ghetto of Milwaukee, Wisconsin. Here Winfrey was the victim of sexual abuse at the hands of a cousin, an uncle, and a family friend. Despite an unhappy home life, Winfrey did well in school but began to rebel and ran away from home to live on the streets for a spell, becoming pregnant at the age of 14 but losing the child shortly after birth. Her mother, not knowing how to handle her rebellious teenager, sent her to live with her father in Nashville, and he took an active interest in Winfrey's education and was a stern disciplinarian. She was again doing well both academically and socially.

3 In high school, Winfrey developed her speaking skills and began her radio career by reading the news on a local radio station. She joined the speech team and was awarded a scholarship to Tennessee State University when she won a speech contest. At the university, she studied communication and theater. People who knew Winfrey as a young woman said that she always knew what she wanted out of life, and they could tell she was going places. Oprah credits her ambition to succeed to her love of reading because books gave her knowledge that a different and better world existed, and she wanted to be part of it.

4 At the age of 19, Winfrey began working as a news anchor at WLAC-TV in Nashville before going to Baltimore to do the six o'clock news; however, while she worked in news for a few years, Winfrey was not entirely satisfied with her career because she did not feel herself as she read the news, which required objectivity and a concerted effort to remain unbiased. She wanted to express herself, so the perfect medium for her was the talk show, and when she became co-host of Baltimore's *People Are Talking,* she found her niche. After several years on the show, she was recruited to host *A.M. Chicago,* which was suffering from low ratings at the time, but with Winfrey at the helm, *A.M. Chicago's* ratings passed *The Phil Donahue Show's* ratings on the Chicago market, *The Phil Donahue Show* being the most popular talk show in America at the time.

5 There was no question that Winfrey was loved by viewers, and if she could beat Phil Donahue in the Chicago market, there was no reason to think she could not do the same all over America. The show was soon renamed *The Oprah Winfrey Show,* and it went national. It has since enjoyed tremendous success and has reinvented the talk show from a tabloid-type show to a serious show dealing with real-life concerns. Her show has even been described as a group therapy session. Winfrey's book club has been hugely successful to the point where a recommendation from Oprah almost guarantees a book becoming a best seller. Winfrey is also a philanthropist and has started her own charity known as Oprah's Angels Network, which provides money to other charities, and encourages people to help others.

1. Why does the writer mention a switch in paragraph 2?
   (A) To illustrate how strict Oprah's grandmother was
   (B) To introduce a debate on corporal punishment
   (C) To show how Oprah was abused as a young child
   (D) To explain why Oprah rebelled in later years

2. According to paragraph 2, which of the following was not mentioned as a positive stage in Oprah's life?
   (A) Living with her grandmother
   (B) Living with her mother
   (C) Living with her father
   (D) Studying at the university

3. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.
   (A) Oprah's career began when she was nineteen and went to work as a news anchor in Nashville, a job she left to go to Baltimore and do the six o'clock new.
   (B) Oprah hated working in the news business and continued to dream of a more creative career such as acting or working as a talk-show host.
   (C) Oprah left her broadcasting job in Nashville to pursue a career that would allow her to express herself.
   (D) Oprah started working as a news anchor when she was 19, first in Nashville and then in Baltimore, but she did not like the format and wanted to express her opinions.

4. What can be inferred from paragraph 5 about *The Phil Donahue Show*?
   (A) It was sensationalism.
   (B) It was very popular.
   (C) It had no competition.
   (D) It went off the air.

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

   Oprah Winfrey's story is one of personal triumph.

   (A) She grew up poor, was uprooted twice, and was abused.
   (B) Being abandoned by her parents was the best thing that could have happened to her as her foster parents were very supportive.
   (C) By getting an education, she was able to escape her bleak circumstances and attain a rewarding career.
   (D) She moved from Nashville to Baltimore to improve her career prospects.
   (E) Her grandmother's strict discipline kept her in line.
   (F) Today, she is one of the wealthiest people in the U.S. and has been called the most influential woman in the world.

UNIT 53

Leadership and Management

1 The tasks of a manager are well defined and easily identifiable. Managers are responsible for the planning, organizing, staffing, directing, and controlling of all the resources at the disposal of the organization which employs them. A person who follows the rules and acts according to standard procedures can be promoted into a management role, but to be a good manager, one must also be a leader. A phenomenal leader is unafraid to attempt innovative things or to follow intuition and gut instincts. People follow leaders of their own accord, not because of the leader's authority over them. A manager who exhibits strong leadership skills will generally outshine those who do not have the same skills. For the purposes of illustration, the former will be referred to as a leader and the latter as a manager. A good manager must exhibit good leadership skills, and a good leader must also exhibit good management skills, but the two are treated as a dichotomy here in order to illustrate the differences.

2 Managers and leaders approach all aspects of management differently. When planning a strategy to achieve an end, managers look to prescribed practices that have been successful in the past and assume that they will work for the task at hand. Leaders, on the other hand, are skeptical of tradition and challenge the status quo. In general, leaders have a vision for what should be but may not have a plan for achieving that vision. When it comes to planning and organization, managers are more likely to get the job done because they will do what has always worked. However, it takes a team of workers to get a job done, and leaders are often more effective at motivating a group.

3 While managers use their authority to prompt people to act, leaders inspire passion in people by showing emotion and conviction, which makes them want to work with the leader towards a common goal. When people do things because they are told to, they generally do not give 100 percent to the task, but when they feel that they are working because they want to, that is, because they believe in the goal, they will work a lot harder. Leaders instill loyalty in their followers because the followers feel as though they are participating in something important. They want to participate because they believe in the cause. Managers may not garner such loyalty because workers feel like they are doing things only because they were told to.

4 The key to the success of leaders is that they are always aware of the utmost importance of their group of followers. In other words, leaders promote a more teamwork-oriented approach than do managers. Managers tend not to give credit to employees for successes but instead take credit themselves because, as they see it, the success of any project is their own success for effectively managing all of the resources, including human resources. At the same time, however, they may blame staff when things fail and planned strategies backfire; this creates a tense environment where resentment tends to build up, and team work is drastically diminished. Leaders, on the other hand, celebrate successes with the group and give credit where credit is due. Where the manager blames subordinates for failures, the leader accepts responsibility. As such, leaders tend to be far better at directing human resources than managers.

5 Again, the best managers are good leaders and the best leaders are good managers. Managers with good leadership qualities are also visionaries who can inspire others to work with them. They help their followers set and accomplish short as well as long term goals through carefully thought out management strategies and methods. They may rely on traditional methods if those methods have worked well and can adequately be applied to the present goal, or they may develop a new strategy to improve on antiquated or inappropriate methods that have been used previously. The best managers treat the members of their team as people instead of treating them like just another resource to be managed. Finding the optimal balance between management practices and leadership practices is essential to being an effective manager.

1. Why does the writer mention that managers and leaders are treated as a dichotomy to illustrate the differences in paragraph 1?

(A) To imply that most people do not understand the difference
(B) To demonstrate the shortcomings of a certain theory
(C) To introduce the topic of leadership and management
(D) To avoid a potential source of confusion

2. What can be inferred from paragraph 3 about subordinates?

(A) They are in competition with each other.
(B) They will try to get the manager's job.
(C) They like managers better than leaders.
(D) They like leaders better than managers.

3. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) Managers deceitfully pretend that they accomplish goals by themselves with no help from others.
(B) Managers view resource management as part of their job and do not resent having to work with subordinates.
(C) Managers view successes as their own and do not recognize the contribution of subordinates as these are seen as part of their own success.
(D) Managers take credit for successes and blame failures on their subordinates and as such are hard to work with.

4. According to the passage, which of the following was not mentioned as part of the job of a manager?

(A) Defining a vision
(B) Making a plan
(C) Organizing resources
(D) Directing subordinates

5. Complete the table below to summarize the information about managers and leaders discussed in the passage. Match the appropriate statements to the one with which they are associated. Two of the statements will NOT be used.

Manager or Leader	Statements
Manager	**Select 2** • •
Leader	**Select 3** • • •

(A) Chooses not to deal with people
(B) Has a vision
(C) Relies on proven methods
(D) Takes credit for successes
(E) Inspires passion in others
(F) Fails to define objectives
(G) Takes responsibility for failures

UNIT 54

Corporate Ethics

1 In the endless pursuit of financial gains, there are bound to be scruples concerning the impact of a corporation's behavior. It is often proven true that actions that yield the maximum profit will also adversely affect the people who are not profiting, such as the workers, the consumers, or the general public. When individuals engage in any kind of behavior, they tend to carefully monitor the impact that it will have on others. In general, they are guided by a system of morals that disallows actions that may harm people. This is not to say that people are not, at times, misguided, or that there are people who will not completely disregard the well-being of others. In general, however, people tend to behave in an ethical way. Corporations, on the other hand, are distinct entities and can be made up of hundreds, even thousands of people. Decisions that adversely affect others cannot always be traced to one individual. This makes it easier for corporations, as a whole, to engage in unethical behavior. Indeed, some argue that when the purpose of the corporation is to maximize returns to owners or shareholders, it is, in fact, unethical for the corporation to engage in activity that undermines its ability to generate profit.

2 Some consider ethics and profitability to be at odds with each other, but this is not always the case. Public perception of a corporation's ethics can have an impact on the corporation's profitability. Many concerned citizens refuse to patronize corporations that engage in what they see as unethical business practices. On a large scale, this is called a boycott. A group of people get together and decide to stop using a product or a service provided by a given corporation in order to pressure it into changing its practices. Boycotts attract a lot of attention and can be quite effective. But individuals, too, make consumer choices based on their perceptions of a corporation's ethics. For example, many people refrained from buying sneakers from a company after they learned that the company operated sweat shops which employed children. Corporations cannot ignore public perception completely. This will affect their bottom line. Furthermore, laws are in place that demand compliance with certain ethical principles. Failure to abide by these laws can result in significant fines, lawsuits, or even the loss of a business license.

3 Simply obeying the law, however, does not mean that a corporation is being ethical. For example, multinational corporations, by definition, operate in several countries and have several different sets of laws to live by. Therefore, depending on which country they operate their business in, they can set corporate standards that may not necessarily be illegal but are considered to be unethical. Returning to the example of sneaker manufactures, many of them operate their sweat shops in countries that do not have laws protecting worker's rights. For example, some countries do not have laws against employing children, but it would still be deemed unethical for a corporation to do so. Just as poor ethical practices can lead to consumer alienation, socially-responsible corporations tend to generate positive feelings among consumers. Again, ethical practices need not reduce profits; in fact, they may increase them.

4 Ethical dilemmas are often not as black-and-white as the issue of child labor. When faced with a troubling problem, decision makers must look at who benefits from one course of action and who benefits from the opposite course of action. For example, a company's executives might be considering investing in a new system of production that is both more efficient and environmentally friendly. However, it is expensive, and because it is more efficient, some workers' tasks will become redundant. The decision makers are presented with an ethical dilemma because they must choose between lessening the negative impact of production on the environment, which can be seen as ethical, and laying off workers, which can be seen as unethical. Ethical concerns often do not have one simple answer that is fair or just. But observers note that when decision makers consider justice above profit margins and legality, they usually make the most ethical decision.

1. What can be inferred from paragraph 1 about people?
   (A) People are generally selfish.
   (B) People are generally good.
   (C) Corporation executives have to do what is necessary to run a profit.
   (D) Corporation executives have to be socially responsible to run a profit.

2. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.
   (A) Some think that shareholders should not have so much say because all they care about is increasing profits.
   (B) Some think that corporations exist to generate a profit and should not be concerned with anything else.
   (C) Some think that shareholders should make decisions because they are the ones affected by them.
   (D) Some think that it is unethical for a corporation to do something that will defeat its ultimate purpose of increasing profits.

3. Why does the writer mention sweat shops in paragraph 2?
   (A) To illustrate how unethical practices can adversely effect sales
   (B) To give an example of a common unethical practice
   (C) To encourage readers to make responsible spending decisions
   (D) To demonstrate that some corporations are worse than others

4. According to paragraph 4, which of the following was not mentioned as a group affected by corporate decisions?
   (A) Workers
   (B) Shareholders
   (C) Wildlife
   (D) The general public

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

   People tend to behave ethically, but corporations should make extra efforts to ensure that their actions are not unethical.

   (A) Profitability is always considered a priority no matter who gets hurt.
   (B) Poor ethical practices can reduce profitability.
   (C) Sweat shops should be banned at a global level.
   (D) Obeying the law is a good start, but being ethical involves more.
   (E) Ethical dilemmas do not always have a clear solution.
   (F) Corporations will always benefit in the long run from making ethical choices.

UNIT 55

Mergers and Monopolies

1 Capitalism heavily relies on competition in order to function optimally. Consumers search for products and services that maintain high quality at a reasonable price. When they perceive two products to be equal in value, they will obviously choose the one that is offered at the lowest price.Therefore, as different firms compete for increasingly larger market shares, they seek more efficient means of production. They are encouraged to innovate, and they are strictly prevented from inflating prices. A more efficient assembly line, for example, allows a firm to produce more goods in less time, which gives them a tremendous advantage over the competition because they can essentially charge a lower price. Firms in competition are always attempting to improve their product so that consumers ultimately view it as superior. Thus, competition stimulates innovation.

2 Without intense competition, however, a firm controls a monopoly. It can charge a higher price because consumers have no other options except not to buy the product. This is not possible when the product is a necessity. The firm must keep the price reasonable enough that potential buyers will purchase it, but that price still is not as low as it would be if the firm faced competition. Because the firm can charge virtually any price, it is not induced by any incentive to invest money into innovation or into developing a more efficient production line.

3 From the firm's perspective, of course, monopolies are optimal because profits are significantly increased when one can charge a higher price and virtually ignore efficiency or innovation. Therefore, it is in the interest of the firm to completely eliminate the competition. One way to accomplish this feat is to out-compete them; that is, to offer a superior product at a more reasonable price. This will drive the competing firm out of business. What is more common, however, is for firms to acquire competing firms through mergers. A merger occurs when two firms join to become one. A larger firm might incorporate its competition into its own firm in order to increase its market share. Sometimes this is done through the purchasing of more than 50 percent of the competitor's shares, whereby the acquiring firm takes control of the target firm. This is called a hostile takeover. Most mergers, however, are friendly in that the two firms agree to the merger.

4 In recognition of the harmful implications of monopolies, governments have taken action to prevent any firm from gaining too much of a market share, that is, from gaining a monopoly. A monopoly is defined as a firm that holds such a large percentage of the market share that it effectively has control over the market. One might argue that anything less than 100 percent of the market share is not a monopoly because there is still some competition. However, this competition is not significant. Large firms have advantages over smaller firms, and it has been determined that once an enterprise holds a certain portion of the market share, other smaller firms cannot hope to compete on equal grounds. When a merger results in a combined acquisition with control of the market, the merger is not legal.

5 The first action taken by the United States federal government to restrict monopolies was called the Sherman Antitrust Act in 1890, which made it a felony to hold a monopoly or attempt to secure a monopoly. However, the wording of the act was quite vague, which left it open to interpretation. To remedy the situation, the Clayton Act was passed in 1904, which made particular actions illegal. Not all mergers, of course, are anti-competitive. Indeed, many mergers involve small companies joining forces in order to compete with larger firms. Mergers can be very complicated and have extensive implications, and as such, an independent body is designated to oversee mergers in the United States. Today, all new mergers are typically examined very closely to ensure that they are not anti-competitive. The chief body responsible for overseeing mergers is called the Federal Trade Commission.

1. According to paragraph 1, which of the following was not mentioned as occurring as a result of competition?

(A) Innovation
(B) Lower prices
(C) Higher wages
(D) Improved efficiency

2. What can be inferred from paragraph 3 about mergers?

(A) They are generally in the interest of the acquiring firm.
(B) They are generally in the interest of the target firm.
(C) They are generally in the interest of the consumer.
(D) They are generally beneficial to both parties.

3. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) The Sherman Antitrust Act of 1890 marked the first American attempt to limit monopolistic endeavors by making them illegal.
(B) The first monopoly in the United States resulted in the enactment of the Sherman Antitrust Act of 1890.
(C) In 1890, President Sherman took action to make monopolistic ventures illegal by passing the Sherman Antitrust Act.
(D) The first time the United States tried to limit monopolistic endeavors, it was prevented from doing so by the Sherman Act.

4. Why does the writer mention the example of small companies merging to form bigger companies in paragraph 5?

(A) To show how mergers are predatory in nature
(B) To give a counter example to illegal mergers
(C) To give an example of an illegal merger
(D) To show how small firms can benefit from mergers as well as large firms

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

Capitalism thrives on competition and is therefore undermined by efforts to eliminate competition.

(A) Mergers involve the purchase of one company by another.
(B) Mergers have been illegal in the United States since 1890.
(C) Competition creates the ideal situation for consumers and the economy.
(D) Hostile takeovers leave small firms vulnerable to predatory firms.
(E) Mergers can, at times, give a firm a monopoly.
(F) Laws are in place to prevent firms from gaining a monopoly in their markets.

UNIT
56

Business Partnerships

1 When two or more people decide to venture into business together for the expressed purpose of turning a profit, they are usually considered to be entering into a partnership unless otherwise specified. While most people tend to think of partnerships as involving two people, business partnerships can be comprised of groups of any size. Partnerships can be informal and agreed upon with a handshake. Conversely, they can require a highly formalized written contract that specifies the nature of the partnership, the obligations of each partner, and the procedures for dissolution. Informal partnerships categorized as general partnerships can be formal as well, though. If the partners wish to define their roles in the company as anything other than equal, they can form a limited partnership. If they wish to protect their personal assets, they can form a limited liability partnership.

2 A partnership is not considered a corporation; the main difference between the two is that corporations are, in every case, distinct entities. This means that the business exists, in a legal sense, separately from its owners, giving individual owners extreme protection from liability. If the corporation fails to completely meet its debts, debtors are not able to require its owners to settle the debt using their personal property. A tax return must be filed for the corporation, and each of the individual owners must file tax returns on the personal income gained as part owners of the corporation. While there are numerous types of corporations, they always exist as distinct entities. Partnerships, however, can be considered distinct entities in some senses but not in others. To demonstrate, the Bankruptcy Code treats partnerships as distinct entities, but the tax system does not. Another problem that further complicates the matter is that many states maintain different laws governing partnerships. Therefore, partnerships become complex even though some basic principles apply everywhere.

3 General partnerships are considered the most basic, straightforward type of partnership. Partners do not need to file papers declaring the business a partnership with the state. Most partners sign a written contract that outlines their business agreement, but they are not legally obligated to do so. Under a general partnership agreement, all partners exist as equal owners of the company. They invest equally, both monetarily and through their hard work and the talent they contribute. In return, they share profits equally but are also equally responsible for any debts or obligations incurred by the company. The business is required to file an income tax report, but it is not obliged to pay taxes; rather, the owners of the business pay taxes on their personal tax returns on income generated from the company.

4 Should partners wish to establish a less equal relationship, they can form a limited partnership. Limited partnerships consist of general partners and limited partners. There must be at least one general partner, and there must be at least one limited partner. The general partner is responsible for the day-to-day running of the business. The limited partner has nothing to do with management but contributes by investing money into the business. Partners share profits, but limited partners are free from liability; that is, they are not responsible for any financial obligations of the company beyond their investment. The general partner, however, is still liable and may be required to use personal assets to settle debt incurred by the company. The benefit of taking on this extra risk is that the general partner retains decision-making rights in the management of the company, whereas limited partners have no say in how the company is run. Unlike general partnerships, limited partnerships must be officially sanctioned by the state.

5 Limited liability partnerships grant all partners equal status in the partnership. In this respect, they are like general partnerships. But unlike general partnerships, no partners are liable for the debts or obligations of the company. They also have to be officially registered with the state. While this may sound like a corporation, there is still a distinction. Corporations are distinct entities and must pay taxes while limited liability partnerships retain the tax advantages of general partnerships. Each partner pays income tax on their portion of the earnings of the company. The company itself does not pay taxes.

1. Why does the writer mention handshakes in paragraph 1?

(A) To avoid a possible misunderstanding about the nature of partnerships
(B) To demonstrate that agreements can be verbal rather than written
(C) To show that only two people can enter into a partnership
(D) To emphasize the informal nature of all general partnerships

2. According to paragraph 2, which of the following is true of corporations?

(A) They are risky compared to partnerships.
(B) They are owned by a single entity.
(C) They are not taxed.
(D) They are separate and distinct from their owners.

3. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) Taking on extra risk benefits the general partner, while keeping the right to make decisions benefits the limited partners.
(B) The general partner benefits from the extra risk incurred by the limited partners who have decision-making power.
(C) While assuming more risk, the general partner benefits by keeping the right to make decisions, which limited partners gives up.
(D) Assuming extra risk is the cost of keeping decision-making rights, which general partners give up.

4. What can be inferred from paragraph 5 about the types of partnerships?

(A) Limited liability partnerships are the safest.
(B) Limited partnerships are the riskiest.
(C) General partnerships are the most complicated.
(D) None of them require a written contract.

5. Complete the table below to summarize the information about partnerships discussed in the passage. Match the appropriate statements to the type with which they are associated. Two of the statements will NOT be used.

Partnerships	Statements
General Partnership	**Select 2** • •
Limited Partnership	**Select 3** • • •

(A) Exists as a separate entity from partners
(B) Only one partner manages the business
(C) Not necessarily registered with the state
(D) All partners' investments are protected
(E) Can be informal
(F) Partners have unequal status
(G) One partner is a passive investor

UNIT 57

Office Communication

1 Effective communication is vital in an office environment. Every office maintains a purpose and with it a plethora of tasks that require completion daily, but when communication fails, procedures slow down and jobs remain incomplete. Much of the inefficiency observed in offices is a direct result of poor communication. There are numerous tools available to office employees to aid communication in the office. It is important to ensure, however, that messages are efficiently delivered to the intended recipients and that they are completely understood.

2 Oral communication can be less effective than it would seem. When people speak with others, they can be sure that the other people are receiving the message, and that it is not getting lost or being intercepted by someone else. However, they cannot be sure that the person understands exactly what they are trying to say. Generally when people do not understand what is being said to them, they ask the speaker to clarify, but sometimes it is not realized that people do not understand the intended meaning, and when this happens, people may proceed to take action that is misdirected. It is a good idea to make sure the listeners understand exactly what is being said by asking them to summarize what has been said. This can avoid a lot of problems that occur as a result of poor communication. Another problem with oral communication is that memories are not very good, and for that reason, important messages should always be written. For example, if a meeting is called to outline procedures that staff will need to follow, the manager needs to follow the meeting with a memo. Managers should not trust that the employees will remember everything that was told to them in the meeting. There may be a lot of information to absorb, and a written summary can be very helpful.

3 Office employees are always busy with different activities and do not have the time to speak with others directly about the issues they need to communicate. This is another situation where memos are handy. Memos are short and to the point. They should be typed to avoid any confusion that might result from illegible handwriting, and they should present only relevant information in a clear, concise manner. Again, like every other form of communication, it has to reach its intended recipient, so it is a good idea to make sure this is the case by asking the recipient to confirm receipt.

4 Email is increasingly replacing the memo because it is instant and does not waste paper. People do not have to leave their desks to send or receive messages, and they can be alerted instantly when a new message arrives in their inbox. Because it is so easy and convenient, however, email can result in wasted time because people are not as cognizant of the need for to-the-point messages. To demonstrate, it involves considerable effort to type, print, and deliver a memo, and so people tend to put careful thought into their memos and are less likely to send frivolous ones. Because email is so simple, however, people will send messages without putting a lot of thought into them and are not careful to make them clear and concise. When the recipient opens the email, he or she must process it and sift through what is relevant and what is not. Still, email can be an excellent tool for improving communication at the office.

5 New technology also gives office workers the ability to combine the benefits of oral communication with the benefits of written communication. Co-workers can engage in an online chat without leaving their desks. That chat can then be saved in order to jog their memory if need be. More than two people can engage in an online conference, but they have to be quite careful because online chatting presents unique challenges since it is so unlike face-to-face conversations. One cannot rely on body language to get the intended meaning across, nor can one observe people's gestures to help understand their intentions. Typing speed can also decrease the conversation speed. Like other technologies, it offers advantages and disadvantages, and the users must do their best to maximize the former and minimize the latter.

1. Why does the writer mention that oral communication can be less effective than it would seem in paragraph 1?

(A) To suggest that people need to think more about how they speak to people
(B) To imply that it is easier than it seems to improve communication skills
(C) To introduce an idea that is not obvious
(D) To introduce an uncommon topic

2. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) People usually understand what is being asked of them the first time it is explained, but sometimes have to ask for clarification so as not to make a mistake.
(B) People usually ask for clarification when they do not understand, but sometimes they are too embarrassed to admit that they do not understand and end up making mistakes.
(C) People usually ask for clarification when they know that they do not understand, but sometimes they think they understand when they do not, and that can lead to mistakes.
(D) People usually ask for clarification even if they think that they understand the first time in order to ensure that they do not make mistakes.

3. According to paragraph 2, which of the following is a method to ensure that oral communication if effective?

(A) Asking the listener to paraphrase what was said
(B) Asking the recipient to confirm receipt
(C) Saving the chat for future reference
(D) Providing a personal letter

4. What can be inferred from paragraph 5 about body language?

(A) It conveys a lot of meaning.
(B) It is essential for effective communication.
(C) It can confuse matters.
(D) It is an unnecessary crutch.

5. Complete the table below to summarize the information about office communication discussed in the passage. Match the appropriate statements to the type with which they are associated. Two of the statements will NOT be used.

Types of Communication	Statements
Memos	**Select 2** • •
Email	**Select 2** • •
Chat	**Select 1** •

(A) Relies on body language to convey meaning
(B) Allows a conference in real time without leaving computer
(C) Written clearly and concisely
(D) Wastes time because of sloppy messages
(E) Takes the most time
(F) Hindered because recipient may forget what he or she was told
(G) Sends messages without wasting paper

UNIT 58 Presentations, Seminars, and Conferences

1 Public speaking is cited by most people as being their most feared experience, but in order to be successful in the business world, the ability to deliver an engaging and informative presentation is essential. Seminars and conferences provide business people with an immense audience to whom they can market their ingenious ideas. Just as the ability to sell a product or service is crucial to the success of a company, the ability to sell an idea is equally crucial to the success of the person. While giving a presentation may be a completely nerve-wracking experience, there are several essential guidelines that can help public speakers appear confident and relaxed even when they are actually wrought with anxiety.

2 While it can be severely intimidating to speak in front of a large group of people, it can also be viewed as an amazing opportunity. The more people in the audience, the more contacts hear the idea or proposal. If someone were to write a proposal and send it via mail to the same quantity of people, it would lack the same success because not everyone actually would read it. Presentations are truly the best way to reach a large number of people, and seminars and conferences are an opportunity to market the company and its idea to as many people as possible. Speakers know that the audience members are interested in the topic because they have chosen to attend, and the speakers have their undivided attention for the duration of the presentation.

3 The most important thing speakers need to remember is to relax, and if they cannot do that, they must attempt to appear relaxed. They mustn't stand behind the podium holding a cue card and reading from it because it is of the utmost importance that eye contact be made with the audience members and that the speech sound as though the words are natural and unrehearsed. Of course speakers should always be well-prepared, but they can be prepared and still have the audience perceive the person as speaking with them rather than talking at them either from a prompt or by delivering a memorized speech. The presentation must seem natural, or people will rapidly lose interest. It is essential for speakers to walk around the stage or presentation area because that allows them to command the space, and it forces people's eyes to move, which keeps their eyes open and their minds alert. Additionally, it probably helps speakers to feel more relaxed.

4 Visual aids are an excellent idea for two reasons. First, the audience benefits because visual aids such as PowerPoint presentations can often be informative and effectively convey otherwise dull or tedious information. For example, by displaying a chart representing sales growth, speakers provide the audience with a general picture of a trend without boring them with a spoken string of facts and figures. A second benefit is primarily psychological. Speakers can relax because the visual aids give the audience something to look at other than focusing on them. This helps tremendously with the overall anxiety that often accompanies giving a presentation. Still, the presentation should be personal, so speakers should not hide behind visual aids for the duration. Speakers should make sure to use the opportunity to let their audience get to know them.

5 Timing is a vital aspect that can make or break a presentation. If the speech is too short, the audience will be left with unanswered questions, and if it is too long, the audience will lose interest. Speakers should ensure they deliver all the pertinent information and provide ample time for a question period immediately following the presentation. Speakers should not assume the job is complete when the applause dies down. Seminars and conferences provide fabulous opportunities to network, so speakers should make sure to speak with the audience members afterwards. They have had the opportunity to present their colleagues with an idea; now it is time to elicit feedback and establish valuable contacts. Nothing is more important in the business world than meeting and establishing relationships with the people that can help encourage success. Seminars and conferences should also be seen as learning opportunities. Attend other people's presentations to learn what peers are doing. It is always interesting to learn about other proposals and use that information to improve the business.

1. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) Although it is a commonly feared experience, public speaking skills are essential to business people.
(B) Speaking in public is the most common phobia and precludes sufferers from having a business career.
(C) Public speaking is a common fear that can be overcome through experience and by developing skills.
(D) Giving speeches is the scariest thing a person can experience, but it is necessary for success.

2. Why does the writer mention a company's ability to sell in paragraph 1?

(A) To suggest that selling skills are the same as public speaking skills
(B) To show why it is important for company executives to have good presenting skills
(C) To introduce the topic of presentations by stating their purpose
(D) To demonstrate the importance of presentation skills through an analogy

3. In paragraph 3, which of the following was not mentioned as an effective technique used in presentations?

(A) Eye contact
(B) Body language
(C) Visual aids
(D) Moving a lot

4. What can be inferred from paragraph 4 about audience members?

(A) They will only listen if the speech is interesting.
(B) They will be more likely to support a proposal if they like the speaker.
(C) They will be less likely to support your proposal if the speaker does not seem professional.
(D) They will not attend the next presentation if they did not like the first one.

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

The presentation of an idea is crucial to its success.

(A) Companies go to great expense to hold seminars and conferences.
(B) The ability to network will get a foot in the door, but presenting skills will sell the idea.
(C) Conferences and seminars give people a chance to promote their ideas to interested colleagues through presentations.
(D) Most audience members are there because they have to be and are difficult to convince.
(E) Presenters should follow proven techniques to keep their audiences engaged.
(F) Following the presentation, speakers should always take the opportunity to network.

UNIT 59

Successful Communication in the Business World

1 The business world is comprised of people essentially required to interact with each other to sell products and services. This interaction, if successful, can facilitate business transactions and allow businesses to run smoothly. However, when people fail to communicate effectively, business can be seriously hindered. The business world maintains all kinds of tools and techniques for delivering messages to others, but simple verbal communication skills are still extremely important. Faxing, emailing, and text messaging are useful when people cannot speak directly, but when they are able to speak face-to-face, they should seize the most of the special opportunity.

2 Obviously, communication cannot be successful if one party is not giving full attention to the interaction. All distractions should be minimized in order to facilitate communication. Any distracting noise occurring in the background should be either reduced, or the speakers should locate a new, quiet place to continue their conversation. Other distractions can be less obvious, however, and one party may not be aware that another party is distracted. For example, if one party is troubled by personal problems, the other may not be aware of these issues and may assume that the conversation is running smoothly. It is especially important to identify clues that one's listener is not supplying their undivided attention. If the listeners' eyes, for example, wander to other parts of the room, their mind might be on matters other than your topic. Further, if the listeners fail to give non-verbal clues that they are listening and understanding, the speaker must exert extra effort to regain the desired attention.

3 Further, speakers can fail to earn listeners' full attention early in the conversation if they are not careful. A good way to get listeners engaged in the conversation is to display interest in what they have to say in return. Communication is a two-way street, and people do not like to be talked at or ignored. Engaging people in a conversation by asking about them, can be a good way to exhibit that they are respected. Next, speakers need to convince listeners that they want to hear what the listeners have to say. Showing respect to a listener is hugely important in this situation. When people feel like they are underlings being given orders from an authority figure, they are far less likely to offer their full attention. However, if they perceive that the speaker sees them as an equal, or as a respectable human being, they will want to participate in the communication. Of course, when entering into a business negotiation, showing respect is of the utmost importance.

4 Having earned the full attention of the listeners, it is essential to ensure that they fully understand the message you are trying to convey. Misunderstandings can be disastrous for business transactions, but it takes more than simply asking if the listeners understand, to ensure that they fully comprehend the message. Indeed, some listeners may take the question as an insult to their intelligence. Again, speakers must always show respect to business associates so as not to undermine the business transaction, so it is imperative to find a way to ensure that the listeners understand without being patronized. The best way to achieve understanding is to create a dialogue rather than a one-way conversation. By asking for and receiving input from the listener, speakers not only get new ideas and feedback, but are also able to gauge the level of understanding.

5 In the course of engaging in two-way dialogues, speakers will also get a feel for whether or not the listeners accept what is being said to them. They may have paid attention, and they may have understood the message perfectly; however, if they have misgivings, they may not proceed in exactly the manner expected. Therefore, the final element involved in successful communication is action. Communication that is understood and accepted should always result in action. Perfect communication should result in perfect action. If any of the key elements are missing, the action that follows will not be exactly what the speaker had intended.

1. What can be inferred from paragraph 3 about people?

(A) They are less likely to listen to a person that they do not respect.
(B) They take a more active role in interactions when they feel important.
(C) They feel more comfortable in conversations when they know their status.
(D) They prefer that the person of higher status initiate the conversation.

2. Why does the writer mention in paragraph 4 that the best way to achieve understanding is to create a dialog rather than a one-way conversation?

(A) To illustrate the importance of a practice introduced previously
(B) To give an example of a method used to establish understanding between people
(C) To give an alternative to a less effective method introduced previously
(D) To imply that it is the most effective way to make someone understand the speaker

3. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) Paying attention and understanding the message is only half the battle because the listener still has to act on what is understood.
(B) They will not understand if they do not pay attention and will not take the appropriate measures.
(C) Having been attentive and comprehended any misgivings, they will behave in an appropriate manner.
(D) Even if they were attentive and understood what's been said, they may not act accordingly if they do not accept the message.

4. According to the passage, which of the following was not mentioned as a key element in effective communication?

(A) Attention
(B) Comprehension
(C) Reiteration
(D) Acceptance

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

Effective communication is essential in the business world.

(A) There are several elements involved in successful verbal communication.
(B) Speakers should ensure that listeners both pay attention and understand the message.
(C) Listeners should pay attention and show respect to the speaker.
(D) A message that is understood and accepted will result in appropriate action.
(E) A misunderstood message will result in errors.
(F) Acceptance is the final element of a successful business interaction.

UNIT 60

Human Resources

1 The personnel of a company is an asset unlike any other assets such as machinery and buildings. Personnel is people with the skills and abilities needed to run the business or organization, and the functions of the enterprise could not be carried out without them. Because they are human beings, they exercise free will, and their choices are affected by and have an effect on the company that is employing them. Large enterprises with large numbers of people working together can run into problems as employees interact with one another to carry out the functions of the business. Therefore, larger organizations generally have a department of human resources, which plays an important role in the running of the enterprise.

2 Organizations need people in order to successfully function. As such, staffing is a primary concern. Human resources managers are essentially concerned with recruiting, training, and otherwise managing new employees. Before recruitment begins, human resources managers exert great effort in engaging in job analyses which define all tasks that need to be completed and determine precisely what is expected of each person recruited in order to carry out these tasks. Both job descriptions and job requirements are defined in order to recruit people with the right qualifications and abilities to carry out the jobs. Having attracted people who believe they are qualified and capable of doing the advertised jobs, the next step is to screen each applicant and select the best people for the jobs.

3 Having selected the best candidates for the jobs, the next task is to make sure that they do the jobs to the best of their individual abilities. This involves both training and performance evaluation. All new and existing employees need to have the tools and motivation to do their jobs well. Job training begins on the first day of work but can continue throughout a person's career. Employees seldom do the job for which they were initially trained for the rest of their lives. There is often mobility within a company, and employees need to be trained for new tasks. Further, businesses are constantly changing in order to become more efficient. Even people who remain in the same job for a long period of time may have to undergo training to learn new procedures. For example, new software might be introduced that makes payroll more efficient. Employees who deal with payroll must then be trained to use the new software.

4 Rewards can be very effective motivators, which make annual performance evaluation an opportunity to realize rewards. Performance evaluations give managers an opportunity to learn about the strengths and weaknesses of subordinates in an objective way and to make improvements where necessary. They also give employees a chance to show how valuable they are to the company and, as such, be rewarded with raises and promotions, in addition to receiving feedback on areas in which they excel and on areas in which there is room for improvement. In general, people strive to do their best and hope to attain a certain amount of satisfaction from their jobs. But financial incentives are an excellent motivator within the company and also help to keep the more talented employees from leaving to go to a competing firm who may offer better compensation packages.

5 Even people who love their jobs generally would not do them without compensation. Another important aspect of human resources is payroll. Of course, all employees receive a wage or a salary, and many companies provide benefits to employees such as health insurance, pensions, and vacation days. However, the function of payroll is not as straightforward as it might seem. As mentioned, pay can serve as a motivating force for employees in that they will work harder in the hopes of receiving a pay raise or a promotion. Unfortunately, pay can be a de-motivating factor when people feel that they are underpaid, or that there is no hope for improving their station. It is important that pay and benefits are perceived as fair, and pay raises are considered attainable to keep employees motivated to do their best.

1. Why does the writer mention payroll software in paragraph 3?

(A) To give an example of a task undertaken by human resources managers
(B) To give an example of how computers are replacing human capital
(C) To demonstrate an instance when training existing staff would be required
(D) To demonstrate an instance when recruiting new staff would be required

2. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) They are an opportunity to demonstrate the contribution that they make to the company's success.
(B) They are an opportunity for personnel to demonstrate usefulness, earn rewards, and gain feedback.
(C) They are an opportunity for workers and managers alike to give feedback to one another.
(D) They are an opportunity for workers to be rewarded annually for all of their efforts over the year.

3. What can be inferred from paragraph 4 about employees?

(A) They will not be loyal to a company if they feel they are underpaid.
(B) They are more concerned with money than with job satisfaction.
(C) They expect to be paid more than they are really worth.
(D) They will stop working hard when they reach a certain salary.

4. According to the passage, which of the following is not a task of human-resource managers?

(A) Job analysis
(B) Conflict resolution
(C) Performance evaluations
(D) Payroll

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

Human-resources management plays an important role in any company because it deals with its most important resource.

(A) Upward mobility in a company is most employees' primary objective.
(B) Job interviews are conducted to ensure that the best applicant gets the job.
(C) Job applicants must be recruited and screened.
(D) Job training is an ongoing process as jobs are constantly changing even within a company.
(E) Employees should be given incentives to do their best and also to keep them from leaving the company.
(F) Sometimes training will be necessary as job descriptions change.

UNIT 61

The World of Advertising

1 People are constantly being bombarded by advertisements. They are the targets of advertising at home when watching television, surfing the Internet, listening to the radio in the car, or driving by a billboard. Advertisements are in newspapers, magazines, buses, subways, and cars; they're everywhere. It is estimated that on any given day, a person is exposed to more than 1,200 different advertisements. Ads are so ubiquitous that people are often unaware that they are being targeted by advertisements, or that the ads are affecting the purchasing choices that they make each day. Advertising is a multi-million dollar industry and a creative, well-placed ad can be very effective.

2 When companies wish to put a new product on the market, they must convince people to try it. This is called the trial objective as the goal of advertising is to get people to give their product a chance. Companies might offer free trials, but more commonly they attempt to attract customers through advertising which is informative and memorable. If the campaign is successful, firms will sell a significant amount of merchandise. However, getting people to try a product is only the beginning. After attention is gained, the firm's advertising team must work towards convincing their customers to buy more. This objective is known as the continuity objective because advertisements aim to keep existing customers from switching to the competition and to create brand loyalty by providing new information about the product to reinforce customers' positive feelings towards it.

3 When customers of the competition are targeted, advertisers' objective now is brand-switching. Through advertising, they demonstrate how their product compares favorably to the brand consumers are currently buying. They can do this through actual taste tests, for example, or by interviewing people for advertisements. The most effective approach is to convince consumers that they will get the best value by switching to a particular brand. Alternatively, if competitors have succeeded in attracting a firm's customers through a successful advertising campaign, the firm must respond with a new advertising campaign to entice its customers to come back. This objective is known as switchback.

4 The cost of advertising can be significant, and most forms of advertisement are inefficient. It is difficult to reach all of the people who make up the target market of a product and no one else. Dollars are wasted advertising to people who are not potential customers, but this is unavoidable. Still, the advertisers' job is to identify the target market and strategically place ads where people in the target market are likely to see or hear them. If advertising on television, for example, advertisers will perform market research to determine what shows their target market is watching. For example, despite the fact that more and more women are working outside the home, advertising for cleaning products are generally directed at women by featuring women in the commercials and by playing the ads during programs that are watched by a large number of women, such as talk shows. Ads can be placed in magazines that have similar themes to the product being advertised. For example, an ad for camping gear might be placed in a magazine about outdoor adventures. The same ad might be wasted if placed in a magazine targeted at teenage girls, for example, because while some might enjoy camping, they are probably not in a position to buy camping gear.

5 Wherever the ad is placed, many members of the target market may miss it, so by increasing the frequency of an ad, advertisers increase the likelihood that members of the target market will be exposed to it. If advertising on television, the more frequently a commercial is run, the more people it will reach. If advertising on a bulletin board, the location will affect how many people see the ad. If it is placed in a high-traffic zone, more people will see it, and if it is placed in a low-traffic zone, fewer people will see it. However, increasing the frequency of advertising costs more money, and advertising is most expensive where it is most effective. Therefore, careful planning is necessary when allocating funds for advertising.

1. Why does the writer mention in paragraph 1 that it is estimated that on any given day a person is exposed to more than 1,200 different advertisements?
   (A) To illustrate how people's purchasing choices are influenced by advertising
   (B) To show how more and more money is being spent on advertising
   (C) To suggest that people are unaffected by advertisements because there are so many
   (D) To demonstrate how prevalent advertising is in our culture

2. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.
   (A) This is called the continuity objective as ads use tactics that encourage customers to continue buying their products without switching to the competition.
   (B) This is called the continuity objective as ads are designed to encourage customers to stop buying from the competition and switch brands.
   (C) The continuity objective is used when brand loyalty is waning, and advertisers need to remind customers why they like their product.
   (D) The continuity objective is used when customers may switch to the competition because they are unhappy with the product.

3. According to paragraph 3, which of the following is not a possible objective in an advertising campaign?
   (A) Continuity
   (B) Increasing market share
   (C) Brand-switching
   (D) Switchback

4. What can be inferred from paragraph 4 about women?
   (A) They no longer do as many household chores since they work outside the home.
   (B) They are more likely to purchase a product if they can identify with the spokesmodel.
   (C) They still do most of the housework even if they work outside the home.
   (D) They now make their own purchasing decisions because they earn their own money.

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

   Advertising is ubiquitous in society.

   (A) There are more television hours dedicated to advertisements than to programming.
   (B) Advertisers must first identify the objective of the advertising campaign.
   (C) By identifying a target market and researching their behavior, advertisers can better reach potential customers.
   (D) Advertisers must raise funds to pay for the advertising campaign.
   (E) Companies must decide the frequency with which the ad should be run, keeping advertising costs in mind.
   (F) Television advertising is the most effective but also the most expensive means of advertising a product or service.

UNIT 62

The Stock Market

1 It takes money to make money, so when a company wishes to establish itself and grow, it needs to raise funds. One way to earn the necessary money to fund the start-up or expansion of a business is to borrow money from the bank, which must be paid back with interest. Alternatively, funds can be raised by selling shares in the company. People invest in the company in exchange for part ownership in it, and as part owners they are entitled to a portion of the profits; therefore, if the company grows, the returns on their investment increase. If the company fails, however, they can lose their investment, such is the risk associated with investing. Shareholders may receive dividends, but many companies do not issue dividends to shareholders. In this case, shareholders hope to realize the returns on their investment by selling the stock at a price higher than they paid. The market where people buy and sell stocks is called the stock market.

2 The arena for trading stock is called a stock exchange, and the location may be physical, such as the New York Stock Exchange, or it may be virtual, as is the Nasdaq. The New York Stock Exchange is located on Broad Street in New York City and is characterized by the charged environment of brokers negotiating prices on the trading floor. Would-be investors first contact brokerage firms with orders for shares in specific companies that are listed with the New York Stock Exchange. All listed companies have a designated spot on the trading floor with a specialist designated to bring buyers and sellers together. Brokerage firms send a floor broker to the floor to bid on stocks on behalf of their clients. Floor brokers surround the specialist and try to outbid one another as the specialist acts as auctioneer. Once a price is determined and the trade has been successful, the details are recorded and sent to the investors via the brokerage. The Nasdaq, on the other hand, involves the exchange of stocks over computer networks with buyers and sellers electronically matched. The technology boom of the 1990s resulted in increased popularity for the Nasdaq, particularly among companies that produce technology such as Microsoft® and Dell®. Instead of a specialist, there is a market maker, who can match sellers and buyers or, more commonly, hold an inventory of stock to sell to investors.

3 Whether trade occurs on a physical stock exchange or in a virtual one, prices are always affected by supply and demand. When stocks are in high demand, that is, when many people want to buy them, the price goes up, but if no one wants to buy, the price goes down. Generally people want to buy stocks from companies that they perceive as strong, meaning that they have high earnings and are worth a lot. The value of a company, or its market capitalization, is determined by its number of shares multiplied by the price of each share. As such, a company's worth cannot be judged based solely on the price of its shares because a company selling more shares at a lower price can be worth more than a company selling fewer shares at a higher price. Further, investors consider a company's potential when deciding whether to invest. If they believe that the company will increase its earnings in the future, they will be more likely to invest.

4 Stock markets, naturally, are affected by the economy, so when the economy is strong, business is strong, and people have money to invest. They want to invest because they are optimistic about companies' prospects for success. This is called a bull market because of the way a bull attacks: by thrusting its horns in an upward direction. Stock prices are going up, and people are making money, so the bull is used as a metaphor. Bears, on the other hand, attack by swatting their paws downward, and a bear market is characterized by falling prices coinciding with a downward trend in the economy. People are less optimistic when the economy is taking a turn for the worse and are less likely to invest; the diminishing demand leads to falling prices.

1. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) People give money to fund businesses with the expectation of being paid back.
(B) People pay to become part owners so that they can share in the profits.
(C) Investors share in profits, so their returns increase if the company grows.
(D) Investors give money only if they believe the company and their investment will grow.

2. Why does the writer mention that a company's worth cannot be judged solely on the price of its shares in paragraph 3?

(A) To illustrate the previous point by using an example
(B) To make explicit the implication of the previous statement
(C) To stress the importance of properly negotiating the price of a stock
(D) To warn readers of a common misunderstanding in the stock market world

3. According to paragraph 4, which of the following was mentioned as a characteristic of a bull market?

(A) Falling prices
(B) Stable prices
(C) Pessimism
(D) Optimism

4. What can be inferred from paragraph 4 about trends in the stock market?

(A) They are driven by investors.
(B) They are driven by brokers.
(C) They fluctuate predictably.
(D) They are regulated by the government.

5. Complete the table below to summarize the information about the New York Stock Exchange and Nasdaq discussed in the passage. Match the appropriate statements to the one with which they are associated. Two of the statements will NOT be used.

Markets	Statements
New York Stock Exchange	**Select 2** • •
Nasdaq	**Select 3** • • •

(A) Not affected by supply and demand
(B) Located in a building
(C) Characterized by economic boom
(D) Sellers and buyers are matched by a specialist
(E) Sellers and buyers are matched by a market maker
(F) Lists many high-tech companies
(G) Virtual marketplace

UNIT 63

The Wall Street Journal

1 Charles Henry Dow and Edward Davis Jones were news reporters from Rhode Island, who made their way to New York City in 1879 with two interests: news and finance. The logical place for them to go was Wall Street, which was and is the heart of New York's financial district, and the best job for them to pursue was reporting financial news. By 1882, they teamed with fellow reporter, Charles Bergstresser, to begin Dow, Jones & Co., which published handwritten financial news bulletins from a small office located beneath a candy store on Wall Street. Within a year, they were publishing the *Customer's Afternoon Newsletter* with an article called "Morning Gossip," which revealed the word on the street about the financial world. From these simple beginnings, one of the world's leading financial newspapers, *The Wall Street Journal*, would rise.

2 On July 8, 1889, *The Wall Street Journal* hit the newsstands of New York City. Dow, Jones, and Bergstresser were committed to giving unbiased financial news, and they soon became a trusted source of financial information. It was common practice at the time for companies to bribe reporters with stock or stock market tips in order to entice the reporters into describing the company's prospects favorably, which would have a positive influence on stock values. Dow, Jones & Co., however, would not be bought. The *Wall Street Journal* was quickly recognized for its integrity as it promised to be unbiased and published the names of companies who were not upfront about profits and losses.

3 While *The Wall Street Journal* was unbiased with regard to financial reporting, its editorial pages had a definite philosophy. The paper today continues its traditional advocating of small government and laissez-faire policies. It still takes a pro-immigration stance, and free trade is seen as fundamental in a free-market economy.

4 As a leading financial newspaper, *The Wall Street Journal* was mainly concerned with the stock market. As such, Dow developed several stock market indices, the most famous of which is the Dow Jones Industrial Average. Originally, the DJIA was calculated each day as an average of 12 companies' closing stock prices; all of these companies were industrial. Today, the index is figured using closing stock prices of 30 companies, and many of these are not industrial. At any rate, the Dow Jones Industrial Average was first published in *The Wall Street Journal* in 1896 and is now one of the most influential and highly relied upon stock market indices.

5 As the son of a farmer and a man of little education, Dow believed that news from Wall Street should not be privileged information, and so he tried to write so the financial world would be understandable to all. He always remained humble and did not lose touch with the working class. Still, *The Wall Street Journal* today has an elite readership with readers earning an average annual income of 191,000 dollars and possessing an average net worth of just over two million dollars. Readership tends to be conservative and growing older as the average age of *The Wall Street Journal* readers is fifty-five.

6 In 1902, Dow, Jones, and Bergstresser sold the paper to Clarence Baron, a journalist from Boston. Under his leadership, the paper's circulation increased from 7,000 to 50,000. The next major change for the newspaper came in 1945 when a managing editor reformatted and expanded the paper. Within the next few years, *The Wall Street Journal* became a national newspaper with regional editions available. The paper today includes several sections, the first, like the original, with corporate, economic, and political stories. A marketplace section was added in 1980, featuring news from the media and technology business. In 1988, a money and investing section was added, which covered international financial markets. Other features appear on specific days, such as the *Personal Journal* which runs on Tuesdays through Thursdays and contains personal stories from the world of finance. The *Weekend Journal* is published on Fridays and includes non-financial news such as sports and travel. Finally, the Saturday edition features a *Pursuits* section, which focuses on leisure activities such as dining and entertainment.

1. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.
   (A) It was normal for companies to try to make themselves look good by bribing reporters for positive reporting.
   (B) It was common for reporters to make companies look good and then ask for stock or stock market tips in return.
   (C) Companies often bribed reporters into making them look good so their stock values would increase.
   (D) Companies hoped for good coverage from reporters because that would result in their stock values increasing.

2. What can be inferred from paragraph 2 about the success of *The Wall Street Journal*?
   (A) It was not merited.
   (B) It was based on its editorial stance.
   (C) It was based on appeasing popular opinion.
   (D) It was because of the integrity of its owners.

3. Why does the writer mention the paper's editorial stance in paragraph 2?
   (A) To illustrate a point about its readership
   (B) To contrast it with its financial reporting
   (C) To demonstrate the objectivity of the reporters
   (D) To suggest that it has a liberal bias

4. According to paragraph 4, which of the following statements is not true of Charles Dow?
   (A) He was worth 2.1 million dollars at the height of his career.
   (B) He developed several stock market indices.
   (C) He had a working class background.
   (D) He had minimal education.

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

   Dow, Jones & Co. expanded a short handwritten news bulletin into one of the world's most trusted financial newspapers.

   (A) The secret to the newspaper's success was unbiased reporting.
   (B) Dow's stock market indices and everyday terminology made the world of finance accessible to regular people.
   (C) A new section was added in 1980 to expand readership.
   (D) While the paper has changed hands and the format has changed, it sticks by its original principles.
   (E) After World War II, the paper underwent several important changes.
   (F) The paper went national when regional editions became available in the late 1940s.

UNIT 64

Currency and Banking

1 In modern times, money is increasingly becoming more of a concept than a tangible commodity. Twenty years ago, most people would never leave their homes without some cash in their wallets unless it was to go to the bank to withdraw some. Today, however, people hardly think about whether or not they have cash or not because they have debit cards and check cards with which they can purchase virtually any good or service, provided they have enough money in the bank. But what does it mean to have money in the bank? If a woman, for example, has 100 dollars in the bank, does that mean that there are actually 100 dollar bills sitting in the vault at that bank especially for her? Banks would fail to profit if they merely held people's cash for them; they make money by lending it to others at a higher interest rate than they borrowed it. When people make deposits in banks, they are effectively lending the bank money, which in turn, lends to others. The banks actually lend out more money than they borrow and, as such, are able to make money. What, then, is money?

2 First, money is a medium of exchange, which is important because it facilitates trade. Barter systems are incredibly inefficient because they rely on a coincidence of wants; that is, in order to acquire a good or a service, one must possess a good or service that is desired by the other person with whom he is trying to barter. For example, if a shoemaker needs a dozen eggs, he or she will be out of luck if a farmer does not need any shoes, and chances are, the shoemaker will need eggs more often than the farmer needs shoes. Therefore, the shoemaker has to find someone who both wants a pair of shoes and has something that the shoemaker needs or wants. To avoid all of this inconvenience and confusion, people have established money as a medium of exchange. The shoemaker can sell shoes to anyone for money and use that money to purchase eggs from the farmer. It has value because all of the players in the economy know that others will accept it as a means of payment.

3 Secondly, money is a store of value in that it can be set aside for a significant length of time and still have value when it is retrieved. A problem that further confounds the barter system is that many goods are perishable. For example, if the baker obtains extra wheat and makes more bread than he can exchange, the bread will eventually get moldy. Thus, if the bread is not exchanged within a certain time frame, it no longer has value. Money, on the other hand, can be set aside with reasonable confidence that it will retain a similar value next week, next month, or next year. If a person has two dollars, he can buy a loaf of bread today, or if he does not need or want bread today, he can put that two dollars in a jar and retrieve it next week to buy a loaf of bread. Alternatively, he can deposit two dollars in the bank and withdraw it next week to buy a loaf of bread. Indeed, inflation and currency fluctuations can affect the value of money, but in general people can count on money retaining some worth.

4 Finally, money is a unit of account, which means that people can assign specific values to different goods and services by using a monetary value. When purchasing a house, for example, there are many different factors that affect its overall value. One house may be more valuable than another because of its modern and energy-efficient qualities. Another may be more valuable still because it is located near superior schools and the thriving business district. Instead of assessing a house's value in comparison to other houses by taking all kinds of factors into account, people assign each home a monetary value because, after all, a home is worth only what people are willing to pay for it. As a unit of account, then, money creates a standard by which the value of different goods and services can be measured.

1. Why does the writer mention in paragraph 1 that money is increasingly becoming more of a concept than a tangible commodity in modern times?

(A) To illustrate a principle of modern society
(B) To illustrate how money has changed over time
(C) To introduce the topic of the definition of money
(D) To introduce the topic of electronic money

2. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) Today, people have to be more careful with how they spend money because unlike credit cards, debit and check cards require money in the bank.
(B) Debit cards and check cards make shopping more convenient because people don't have to worry about whether there is money in the bank.
(C) Today, people are more careless about money because they can use their cards to buy now and pay later.
(D) People don't worry about cash anymore because if they have enough money in the bank, they can use special cards to buy whatever they want.

3. According to paragraph 2, which of the following is not mentioned as a problem associated with the barter system?

(A) It is inefficient.
(B) It requires a coincidence of wants.
(C) Perishable goods lose their value quickly.
(D) It relies on credit instead of money.

4. What can be inferred from paragraph 4 about money?

(A) Its form is irrelevant.
(B) It is a necessary part of an economy.
(C) It has always existed in one form or another.
(D) It is being replaced by electronic banking systems.

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

Money can be tangible or electronic, but to qualify as money it must meet three criteria.

(A) It must be a medium of exchange in order to make trade easier.
(B) It must be a store of value, meaning that if it is saved it will retain its worth.
(C) It must be acceptable as a means of payment in any country.
(D) It must be valuable in and of itself so it will retain its worth.
(E) It must be portable so that people can carry it on their person.
(F) It must be useful as a unit of account which connotes the value of a thing in numerical terms.

SECTION 5

Art and Music

PART A | Techniques

unit 65 Body Art of the Maori
unit 66 Pigment, Dyes, and Paint
unit 67 The Art of Weaving
unit 68 Beautiful Batik

PART B | Art History

unit 69 Expressionism
unit 70 Sculpture
unit 71 Mosaics
unit 72 The Development of Portraits

PART C | Music and Music History

unit 73 Famous Composers
unit 74 The Piano and the Violin
unit 75 The Orchestra
unit 76 Jazz

PART D | Theater Arts

unit 77 On the Stage
unit 78 Isadora Duncan

PART E | Photography

unit 79 The Story of the Camera
unit 80 Cinematography

UNIT 65

Body Art of the Maori

1 *Ta moko* is a type of body art traditional to the indigenous people of New Zealand, the Maori. It has been practiced for thousands of years and is based on a fascinating legend involving a Maori chief named Mataora, who fell deeply in love with a woman named Niwareka when she was visiting from the underworld with her father, who was the ruler of that underworld. The two were married and lived happily for some time until they had a terrible fight which culminated in Mataora raising his hand in anger. Niwareka would not stay in the home where she had been the victim of violence and returned to the underworld. Mataora, realizing his mistake, went in search of his wife to beg her forgiveness and promise never to hurt her again. Upon entering the underworld he found Niwareka's father giving a tattoo and requested a tattoo himself. As Niwareka's father worked, Mataora sung of his sadness and was heard by Niwareka, who returned to her husband and requested permission to return to the upper world with him. Permission was granted, and Mataora returned home with his wife and with his tattoo to remind him of the sorrow he had suffered when he was without his wife so that he would not misbehave again. He taught the practice to others in the upper world, and *Ta moko* became a tradition.

2 Though it is often referred to as tattooing, *Ta moko*, which literally means strike or tap, is unlike modern tattoos. Instead of using pins to puncture the skin, chisels made from albatross bones were traditionally used to carve the skin. Grooves are made in the skin, so the actual surface is altered, while tattoos leave the skin smooth but dyed. *Ta moko* also colors the skin using pigments derived from the awheto caterpillar and burnt timbers. These pigments were kept in lavishly decorated vessels that were passed down from one generation to the next.

3 *Ta moko* was traditionally a status symbol among the Maori with only the most important people having the supreme privilege of receiving *moko*. It was also a rite of passage to adulthood performed on both men and women. Men generally had their faces, buttocks, and thighs done and possibly their backs, stomachs, and calves. Women, on the other hand, typically received *moko* on their lips, chins and sometimes their foreheads, buttocks, thighs, necks, and backs. In addition to being a status symbol and a rite of passage, *Ta moko* was practiced in order to make people more attractive to the opposite sex; for example, full blue lips on women were considered the pinnacle of beauty. *Ta moko* also tells of a person's history. For example, *Ta moko* indicates whether the people were honored with the *moko* because of their family's high standing in the community or by virtue of their own deeds.

4 The practice of *Ta moko* was largely terminated coinciding with the arrival of Europeans to New Zealand. It seems that men completely stopped receiving *moko*, but some women continued to do so, though rarely. The 1990s, however, was characterized by a renewed interest among the Maori in reestablishing a cultural identity as well as reviving the Maori language. *Ta moko* became popular again amongst not only the Maori but people all over the world. The popularity among non-Maoris, in fact, has caused a great deal of resentment. The resurgence of the practice was meant as an affirmation of Maori culture and identity, but it was felt that when certain celebrities such as Mike Tyson received *moko*, the Maori culture was being undermined by treating a cherished custom as a novelty.

5 Few *Ta moko* artists today use traditional methods of carving the skin because it poses a significant health risk. It is also extremely painful and takes a long time. Traditional *Ta moko* can require several days to complete. Because such drastic time and effort are required of the *Ta moko* artist, traditional *Ta moko* is also very expensive. Instead, needles are utilized to tattoo *Ta moko* designs on the skin. Although the traditional method is not practiced, the heritage of the Maori people remains alive in the intricate designs and in the unique parts of the body where the tattoos are placed.

1. Why does the writer mention the story of Mataora and Niwareka in paragraph 1?

(A) To explain why the face is tattooed in *Ta moko*
(B) To explain the significance of *Ta moko* on different body parts
(C) To introduce the topic of *Ta moko* through its mythology
(D) To imply that *Ta moko* is more culturally significant than tattooing

2. What can be inferred from paragraph 1 about the Maori culture?

(A) It condones violence against women.
(B) It frowns upon violence against women.
(C) It is highly religious.
(D) It is highly superstitious.

3. According to paragraph 3, which of the following is not a reason *Ta moko* was received?

(A) As a symbol of status
(B) As a rite of passage
(C) To appear more attractive
(D) To demonstrate strength

4. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) The use of *Ta moko* among non-Maori celebrities was seen by some as undermining the revival of Maori traditions.
(B) The use of *Ta moko* among celebrities made *Ta moko* popular again and is credited for the rebirth of Maori culture.
(C) The revival of *Ta moko* was part and parcel of a larger agenda to revive Maori culture and traditions.
(D) The revival of *Ta moko* was endorsed by Maori celebrities in order to affirm Maori identity and culture.

5. Complete the table below to summarize the information about *Ta moko* discussed in the passage. Match the appropriate statements to the one with which they are associated. Two of the statements will NOT be used.

Types	Statements
Traditional *Ta moko*	**Select 3** • • •
Tattoo	**Select 2** • •

(A) Uses needles to puncture the skin
(B) Uses albatross bones to carve the skin
(C) Leaves skin smooth and colored
(D) Leaves skin pierced and stretched
(E) Carves large grooves into the skin
(F) Is a rite of passage among high status people
(G) Is associated with the spread of disease

UNIT 66

Pigments, Dyes, and Paints

1 As Paleolithic cave paintings will attest, art has always been an important aspect of human expression, and a major component of artwork is color. Today, people can choose from an array of colors when creating art, whether engaging in painting, photography, clothing, jewelry, or any other medium of expression. But long before we had synthetic pigments and dyes, people had to find their color sources in nature in order to represent it. Pigments were found in organic sources such as ochre. Ochre is earth that contains silica, alumina, and ferric oxide and may be yellow, red, purple, or brown. These pigments were used to make cave paintings and to decorate the body in prehistoric times. They are known as mineral pigments because they come from the earth. Biological sources of pigments that have been used over the years include insects, animal waste, and mollusks.

2 Some sources of mineral pigments were scarce, such as lapis lazuli, a precious stone of deep blue. The color derived from lapis lazuli was called ultramarine. Tyrian purple was difficult to obtain because it was derived from a mollusk in the Mediterranean, and the process of extracting the pigment was complicated. As such, lapis lazuli and Tyrian purple were both extremely expensive and, therefore, became associated with wealth in Europe. Only the very wealthy could afford clothes that were dyed using the scarce pigments or have portraits commissioned featuring the colors yielded from them. Only the elite could afford to have portraits commissioned, but it was the richest of the rich who had the money to have the colors ultramarine or Tyrian purple featured. This is precisely why deep blue and purple have come to be associated with royalty. Further, the process of extracting pigment from biological sources was, at times, a closely guarded secret. For example, a pigment called carmine was derived from an insect in what is now Mexico and became hugely popular in Europe during the era following the discovery of the Americas. The bright red carmine was utilized to outfit cardinals in the Vatican as well as soldiers the British army. The latter became known as the Redcoats. The particular insect from which carmine was derived was kept a secret. It was not until the eighteenth century that scientists determined that the pigment came from cochineal insects that had been dried and crushed.

3 The high price of lapis lazuli and other pigments provided incentive to find an inexpensive alternative. During the Industrial Revolution, much effort was put into developing synthetic pigments. The color ultramarine was duplicated using aluminum silicate and sulfur impurities. Chemically, it is no different from lapis lazuli, but it is much cheaper because it is artificial and easily produced. Synthetic varieties of many colors have been developed, so artists can purchase paints and dyes of any color cheaply. It is still possible to purchase organic pigments, but the quality of synthetic variations is generally very high. Therefore, organic pigments are not usually worth the extra expense. In fact, vermilion, which is a mercury compound, has been all but abandoned because of its toxicity and the way it reacts with other pigments. Unlike ultramarine, synthetic variations of vermillion are not chemically similar to the original, so they are referred to as vermilion hues.

4 As more and more synthetic pigments became readily available, the use of color in clothing, decorating, and art became increasingly commonplace because they were more affordable. Further, as the practice became more common, manufacturers improved the process of duplicating the same colors. Previously there had been considerable variation from one color purported to be, for example, Indian Yellow, to the next. This was especially true when using organic sources because the potencies could vary. However, synthetic manufacturing of pigments allowed the industry to set standards. In 1905, the Munsell color system was established to define color objectively based on its hue, lightness, and chroma. A color's chroma is the difference from gray at a given hue and lightness. Effectively, the system allowed people to measure color objectively, which meant that when a certain color was asked for, people knew exactly what color would be received.

1. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) Today, color choice is the most important aspect of most art forms.
(B) Today, people can use more colors when creating art than in the past.
(C) Whatever the art form, there are a variety of colors to choose from.
(D) Depending on the art form, there may be many colors to choose from.

2. According to paragraph 2, which of the following was not mentioned as a color derived from an organic pigment?

(A) Ultramarine
(B) Tyrian purple
(C) Carmine
(D) Cardinal

3. What can be inferred from paragraph 3 about synthetic pigments?

(A) They keep the name of the natural pigment they imitate only if they have the same chemical properties.
(B) They have caused the price of the natural pigments they imitate to go up because they are considered rare.
(C) They generally take the name of the natural pigment they imitate unless there are a variety of shades and hues.
(D) They adopt a different name from the natural pigment they imitate as a matter of convention.

4. Why does the writer mention the color Indian Yellow?

(A) To give an example of a natural pigment that inspired a synthetic variant
(B) To illustrate an abstract claim using a concrete example
(C) To demonstrate why color standardization was difficult to achieve
(D) To introduce the topic of the Munsell color system

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

Color has been an important part of art since the dawn of humanity.

(A) Color is derived from pigments which can be found in mineral and biological sources.
(B) Blue and purple are associated with royalty because they were expensive dyes.
(C) It is easier to extract pigment from mineral sources than biological sources.
(D) Organic pigments are higher quality than synthetic pigments.
(E) Synthetic pigments were developed as a cheaper alternative to organic pigments.
(F) Standards were set in the twentieth century which made color measurement objective.

UNIT 67

The Art of Weaving

1 The weaving of fabrics is perhaps one of the world's oldest art forms, though it is quite difficult to pinpoint the specific date of its origin. Fabrics are perishable, and as such, people often do not locate clothing remnants or other textiles in the ruins of ancient sites. They can, however, infer that fabric weaving has been practiced for an extremely long time because fabric satisfies some essential needs. People require insulation from the cold and need to eat, so weaving would have always been an invaluable skill because it allowed people to make clothing for protection from the cold, floor mats for protection from the dampness, and netting to catch fish for nutrition. Historians speculate that the first string was developed during the Stone Age when early humans began twisting plant fibers together. Once they possessed strings, they were able to weave them together to create fabrics.

2 While physical evidence of textile manufacturing is a scarcity, some essentially does exist to share the story of the development of weaving. For example, tools utilized to weave fabric have survived from approximately 5800 BCE in Peru. In fact, some actual textiles were preserved in burial sites in the area and illustrate that these ancient peoples grew cotton and knew several techniques for weaving it. Further, the preserved tombs of Egyptian pharaohs have provided excellent storage for fabrics worn, of course, by the mummies inside. It is known, then, that from about 5000 BCE, Egyptian pharaohs were adorned with clothing mainly comprised of linen, which was derived from the flax plant growing in the region.

3 The Hebrew population was securing fabrics from a multitude of sources by 3000 BCE, and their use was learned of from the Old Testament in the Bible. Apparently wool was the most common source of fabric, but linen was also used, particularly among priests, who were forbidden from wearing anything but pure linen. Combinations of linen and wool were strictly prohibited, and if a married woman spun in public or under the moonlight and inadvertently exposed her arms, her husband would be allowed to divorce her. A thriving weaving industry in Mesopotamia is evidenced in clay tablets that date to 2200 BCE, and historical Chinese legend tells of an empress who accidentally discovered the secret to silk manufacturing in 27 BCE. It seemed that a disease was killing mulberry trees in her beautiful garden, but when she investigated, she noticed miniscule white worms spinning cocoons. She took these cocoons home and accidentally dropped one in a bath of warm water, causing it to unravel and revealing delicate fibers. When the empress thoroughly examined them, she realized that it was, amazingly, one continuous thread that could be woven in to a fine fabric. Hence, the weaving of silk was born.

4 All early weaving was accomplished using relatively simple looms, a loom being a device used for weaving fabric. The simplest looms are merely frames that hold the threads in place vertically, allowing weavers to interlace more threads horizontally. The vertical threads, known as the warp, comprise the backbone of the fabric, while the horizontal threads that are weaved through the warp are called the weft. Hand weaving can be a time-consuming process, and so, over the years, weavers have developed tools and techniques to speed up and ease the process. By inserting rods in the warp that lift every other thread, weavers could more easily insert the weft.

5 Threads always had to be taut when weaving, and so, in time, a device was developed which utilized the weaver's weight to maintain tension on the threads. This machine was called a back strap loom as a back strap was placed around the waist of the weaver and attached to the loom so that when the weaver leaned back, the threads were tightened. In time, more complicated and elaborate looms were developed using pulleys and levers to free the weaver's hands by using foot-treadles to manipulate the threads. As looms have become more advanced, more complicated weaving techniques have been developed. Today, computers can be used to control the mathematical component of weaving such as how many threads are used and the length and width of each fabric. Coupling computers with looms creates numerous possibilities for the modern weaver.

1. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) Woven fabric helps meet basic needs by keeping people warm and helping them catch food.
(B) Basic needs of food and shelter are met by weaving fabrics.
(C) Woven fabric can be used for insulation from the cold, which is important for survival.
(D) Woven fabric has more uses than just providing warmth; it also helps supply food.

2. According to paragraph 2, in which of the following places have actual textiles been preserved for thousands of years?

(A) China
(B) Peru
(C) Japan
(D) Mesopotamia

3. What can be inferred from paragraph 3 about the Hebrew population?

(A) It had strict laws to protect women.
(B) Sheep herding was the main livelihood.
(C) It believed wool was impure.
(D) Women were oppressed in the society.

4. Why does the writer mention computers in paragraph 5?

(A) To conclude the topic with the most recent development in loom technology
(B) To contrast modern weaving techniques with early weaving techniques
(C) To suggest that weaving is no longer an art form
(D) To offer a prediction for the future of the weaving industry

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

Weaving is an art form that has been practiced for thousands of years.

(A) Evidence of weaving by early humans is found in Peru and Egypt.
(B) Written records allude to weaving by the Hebrew peoples and in Mesopotamia.
(C) The first evidence of weaving is found in China, where silk was developed.
(D) The loom revolutionized the art of weaving by freeing the weavers' hands.
(E) Different types of looms have been developed over the years to make weaving easier and allow for more complicated weaves.
(F) We know that the Hebrew peoples wore woolen fabrics because it is documented in the Old Testament.

UNIT 68

Beautiful Batik

1 The art of dying can be extremely complex and time consuming, which can be demonstrated by the ancient art of batik. Batik is an Indonesian word that means wax-written and is used to describe a fascinating dying practice that, as the name suggests, utilizes dye-resistant wax to dye fabrics numerous brilliant colors using especially intricate designs. Though the origins of batik are unknown, it is known that by the thirteenth century, it was an important art form in Java. Batik requires tremendous patience and great attention to detail, and the process of applying the wax, dying, repeating, and removing the dye is believed to help the artist develop spiritual discipline. The design is said to leave an impression not only on the fabric but also on the soul of the artist responsible for it.

2 Sitting on a low stool, the batik artist stretches fabric over a bamboo frame to begin the detailed work. Using a device called a canting, hot, dye-resistant wax is added to specific areas of the fabric that the artist wishes to protect from dying. It is not unlike a pen or a stylus but instead of requiring ink, the canting is filled with hot wax, and the diameter of the spout varies so the artist can choose the size that best suits the design desired for replication. The wax is absorbed into the fabric, and it cools and hardens quickly, so the artist must work speedily yet, at the same time, in a steady, consistent manner so that the wax application is even. Some batik artists first draw the design on the fabric to avoid errors, but many simply draw the design directly onto the fabric with the hot wax. With much experience, the artist becomes adept at drawing intricate designs from memory directly onto the fabric. A third, more simplistic option is also readily available to batik artists. Rather than working freehand or tracing a pattern previously drawn onto the fabric, the artist can use a stamp known as a cap. Caps are made out of copper and have impressions of commonly used designs on them, so the artist simply fills the cap with hot wax and stamps the impression onto the fabric.

3 After the main design is applied to the fabric, the more intricate details follow, and finally, if there are large areas of the fabric that are not meant to be dyed, the artist can apply wax using a paintbrush. Then, the fabric is turned over and wax is reapplied on the other side of the fabric in order to ensure that the wax is completely absorbed by the fabric because if the dye can access the fabric from the other side, the whole process will have been for naught. Often, this is how young girls learn the craft, by copying their mothers' work on the other side of the fabric. Finally, before dying commences, the fabric must be washed with soap and water and then rinsed.

4 The next step is to dye the fabric. Today, dying is usually ultimately achieved using synthetic dyes, but traditionally dyes were created from natural sources such as tree bark and chicken blood. If the artist chooses to use more than two colors, a cotton swab might be used to dye small parts of the fabric and then apply wax to protect the color. The whole fabric is then dipped in a vat full of dye and then removed and hung to dry, but the process is still not yet completed. The whole procedure can be repeated any number of times, depending on how many colors are to appear in the final product. After the first dying, the artist may wish to remove some of the wax by scraping it off or remove all of it by boiling it out. Then the wax must be reapplied to carefully protect the areas that have now been dyed before proceeding with adding a new color to the fabric. When the fabric has received all of the dye it is meant to receive, the wax is completely removed by boiling the fabric in water, although it is impossible to completely remove all of the wax. The final result is a colorful, intricate design with the marks of hand craftsmanship.

1. According to paragraph 2, which of the following is not a tool used by batik artists?
   (A) Bamboo frame
   (B) Canting
   (C) Cap
   (D) Stylus

2. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.
   (A) By turning the fabric over, the artist is able to apply more wax to the other side, doubling the production rate.
   (B) Applying wax to both sides is a waste of time because, if it absorbs properly, it should work the first time.
   (C) Wax is applied to both sides of the fabric to ensure that it is fully absorbed and dye cannot infiltrate the fabric.
   (D) Artists must make sure that they are not wasting time because if the first applications cools before the second is applied, the procedure will not work.

3. What can be inferred from paragraph 3 about batik?
   (A) Men are forbidden from taking part in the dying process.
   (B) Designs and techniques are handed down through the generations.
   (C) It is an art form similar to painting.
   (D) Dyed fabrics can be ruined by soap.

4. Why does the writer mention chicken blood in paragraph 4?
   (A) To contrast natural dyes with synthetic ones
   (B) To demonstrate inhumane practices that have been abandoned in recent years
   (C) To give an example of a natural source of dye
   (D) To give an example of a superstitious belief of the Javanese

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

   Batik is a dying technique typical of Indonesia.

   (A) Batik originated in the Indonesian city of Java.
   (B) It involves repetitive dyings using dye-resistant wax to protect certain areas from dye.
   (C) Several tools are at the artists' disposal for perfecting their designs.
   (D) Children learn how to dye fabrics at a young age.
   (E) Batik designs are renowned for their use of color and attention to detail.
   (F) Batik is an art form that has been rejuvenated in recent years.

UNIT 69

Expressionism

1 The mark of a painter historically has been the ability to accurately represent the world on canvas. Portraits were judged by their likeness to the subject or on their likeness to what the subject would look like without certain flaws. Landscapes were admired for capturing the Earth's natural beauty in paint, and the aim was to accurately portray depth with seemingly three-dimensional images. The more lifelike the piece, the greater was its acclaim. Early in the twentieth century, however, an innovative movement developed in which the work of painters became personalized and subjective. Unlike their predecessors, the painters influenced by Expressionism were interested in capturing emotional reactions through using arbitrary yet powerful colors and jarring compositions. Vivid colors were utilized in a seemingly rash way, and the overall effect was remarkable. The object was not to depict objective reality but rather to express the artist's subjective experience of it. As such, expressionist art often portrays personal turmoil and angst, a noteworthy example being Edvard Munch's *The Scream*.

2 Early works in the expressionist genre continued to feature people and objects found in the natural world, though artistically depicted in an exaggerated or distorted way. In the twenty-first century, some artists took expressionism a drastic step further. They began depicting abstract concepts as opposed to physical objects in their pieces. It was, therefore, referred to as abstract expressionism, and it was another measurable step away from the representation of physical reality in art. Images were unstructured and visually striking because of the use of vivid colors and large canvases. Artists took free reign as anything was permissible, which led to tremendous variety and divergence from one artist to another. Two major types of abstract expressionism were identified by Irving Sandler, an art historian, in order to categorize the wide array of art. The first group was comprised of gesture painters, and the second was referred to as color-field painters.

3 The most famous of the gesture painters, and indeed, the man credited with beginning the abstract expressionist movement, was Jackson Pollock. He was the first noteworthy painter to create works of art without using any kind of model from the physical world. He used liquid paint, and rather than applying it to the canvas using brush strokes, he devised a dripping technique. He would let paint passively drip from his brush to create dots or fling the paintbrush violently to create the impression of movement. He laid canvas on the floor or hung it on the wall giving him more freedom of movement and allowing him to approach it from any angle. He would play jazz music and almost go into a trance, during which he would create his art. The resulting image was a lively web of colors that displayed a certain harmony despite its spontaneous creation.

4 While gesture painting was considered highly emotional in nature, the group of painters that would follow considered their works intellectual. These were the color-field painters, so called because their work was flat and two-dimensional. Their works featured solid colors evenly applied and extending to the ends of the canvas. Mark Rothko, for example, simplified the art by focusing on color alone and, by so simplifying, managed to create images that seemed to float in space in front of the canvas. He used simple geometric shapes and blurred edges to create this effect. The birth of color-field marked a movement to a more controlled and articulate form of abstract painting.

5 Abstract expressionism, then, included a wide range of artistic images. The intense images of gesture painting, so named for its gestures of freedom and liberation from the constraints of traditional painting styles, were vibrant, created the illusion of motion, and were inspired by passionate painters with troubled souls. They dominated the art world in the 1940s and 1950s but were replaced by the color-field painters of the 1960s. Color-field painters moved away from that erratic approach and simplified it, concerning themselves only with color. The result was a cooler, more controlled image, which they felt was more intelligent than the emotional artistic outbursts of their counterparts.

1. Why does the writer mention that paintings were also judged on the likeness to what the subject would look like without certain flaws in paragraph 1?
   - (A) To introduce a topic
   - (B) To express an opinion
   - (C) To qualify the leading statement
   - (D) To offer an alternative

2. What can be inferred from paragraph 1 about about some of the early expressionists?
   - (A) They had no appreciation for nature.
   - (B) They were not successful in their lifetimes.
   - (C) They were shunned by the artistic community.
   - (D) They were psychologically imbalanced.

3. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.
   - (A) Mark Rothko's specific focus on color allowed him to create an optical illusion.
   - (B) Mark Rothko simplified his art by focusing on color and ignoring other details.
   - (C) By focusing on color, Mark Rothko was able to figure out which colors created a floating effect.
   - (D) By using optical illusions, Mark Rothko was able to enhance the colors of his work.

4. According to the passage, which of the following people was not mentioned as an expressionist painter?
   - (A) Edvard Munch
   - (B) Irving Sandler
   - (C) Jackson Pollock
   - (D) Mark Rothko

5. Complete the table below to summarize the information about expressionism discussed in the passage. Match the appropriate statements to the type with which they are associated. Two of the statements will NOT be used.

Types of Expressionism	Statements
Gesture Painting	**Select 3** • • •
Color-field Painting	**Select 2** • •

   - (A) Featured natural scenes
   - (B) Painter works in a deliberate and calculated way
   - (C) Artist's emotional state is represented in the finished product
   - (D) Focus is on brush stroke
   - (F) Popular in the 1940s and 1950s
   - (G) Considered intelligent and articulate
   - (H) Artist works spontaneously

UNIT 70 Sculpture

Sculpture is one of the oldest known art forms in the world, if for no other reason than the fact that it is also one of the most enduring. Whereas a painting is likely to fade and a song is quickly scattered with the wind, a figure carved in stone can last for thousands of years. It is, in fact, a series of small stone figures that are known as the world's oldest sculptures, and one of them was found in Willendorf, Austria, in 1908 and is called the *Woman of Willendorf* or the *Venus of Willendorf*. Dated to 24,000 to 26,000 years ago, it is a four-inch high figure of a woman with exaggerated breasts, stomach, thighs, and stubby feet. Her head is surrounded by a hood of braided hair. Similar statuettes have since been found and are collectively referred to as Venus figurines.

Although archeologists have accumulated dozens of theories regarding the cultural significance of the Venus figurines, many concede that the concept of fertility plays some role. While the Venus figurine remains a mystery, the paleolithic allure of sculpture itself is generally considered to have been the permanence offered by creating images in materials like stone. Indeed, throughout history, a preference for valuable and durable sculpting materials such as bronze, marble, limestone, and granite can be seen; occasionally, even more precious substrates such as gold, silver, jade, or ivory can be found.

A sculpture is produced in four stages. Once a suitable piece of material has been selected, the sculptor begins by splitting off large chunks that are not needed in a phase called roughing out. The artist uses a chisel with a long, heavy, and pointed piece of metal that has a flat head for striking with a mallet on one end. These are called point chisels or pitching tools. Next, the sculptor uses more delicate tools, such as toothed or claw chisels, to refine the figure and give it texture. After this phase, file-like instruments called rasps or the smaller rifflers are used to perfect the shape and add finer details. Finally, the stone is polished with sandpaper or emery.

Sculptures can be categorized into several types. The one with which perhaps everyone is most familiar is the free-standing sculpture, which is a statue that is connected only to its base. The bust, representing only the neck and head of the subject, is another common subtype, as is the Equestrian sculpture, featuring a famous or revered figure mounted on horseback, typically sculpted with military and political figures. Relief sculpture is a term used to denote figures that have been carved out on a surface, such as a slab, wall, or building. High relief and low relief are terms used to describe the degree to which the figure protrudes from its substrate, with high relief appearing more like statues and low relief more like drawings.

There is no single part of the world that can claim sculpture as its creation: unique and artistic sculptures are found throughout the ancient world, from China and India to Europe, Africa, and the Americas. The ancient Greeks are generally regarded as having perfected sculpture in the ancient world. They took an entirely naturalistic approach, attempting to represent the human form precisely based on observation or use of live models. Some of their conventions were depictions of young, athletic males and voluptuous, nude females. Their sculptures were so highly regarded that they were mimicked as far away as India, where the Gandhara Kingdom produced Hellenistic Buddha statues in the first and second centuries.

The Gothic style emerged in Europe around the eleventh century, featuring very tall, elongated figures. This style remained until the Renaissance, when early Italian masters revived and remastered the ancient Greek style. The first free-standing nude statue since antiquity was sculpted by Donatello in the early fifteenth century. Possibly the most famous sculpture in the world to date, Michelangelo's *David,* was presented on September 8, 1504. Considered a mastery of the human form, this version of *David* differs from others in that it captures him prior to his battle with Goliath, tense and lithe, rather than basking in victory.

1. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) Unlike the Venus figurine, there is general agreement on early humans' interest in sculpture, namely, that it was related to the fact that it lasts for a long time.
(B) Though no one can be sure, it is hypothesized that the stone used in the Venus figurines represented the very essence of the stone-age culture itself.
(C) In spite of years of research, scientists are still uncertain as to why the Venus figurines were made of stone while wood and bone were also available.
(D) The nature of prehistoric man's attraction to sculpture, while uncertain, is in all likelihood inextricably bound up with the Venus figurines.

2. According to paragraph 3, what is NOT a tool used by the sculpture?

(A) Riffler
(B) Point chisel
(C) Fulcrum
(D) Mallet

3. Why does the writer mention the Gandhara Kingdom in paragraph 5?

(A) To indicate the dual influences that have produced the modern sculpture tradition
(B) To draw a comparison with other early traditions, like those of China and India
(C) To provide an example of a non-European culture with highly developed art
(D) To illustrate the geographic range of the influence of Ancient Greek sculpture

4. What can be inferred from paragraph 6 about statues?

(A) Most other statues of *David* feature him holding an ornate sword.
(B) Donatello was forced to work on statues under the direction of noble families.
(C) There were no free-standing nude statues from the Gothic period.
(D) Rival schools often refused to recognize the statues of other masters.

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

Sculpture is one of the oldest art forms, appealing due to its enduring nature.

(A) The Venus figurine found in Austria in 1908 is the oldest known sculpture in the world and is likely related to fertility.
(B) Many sculptors prefer to stick to a single method and sculpture type, such as military sculptors, who prefer to produce equestrian works.
(C) Sculptors work in stages of increasing detail and delicacy and can produce many different types of sculptures.
(D) The most sophisticated aspects of a sculpture are detailed using fine tools, such as rasps, rifflers, sandpaper, and emery.
(E) Though found all over the world, sculpture is generally considered to have been practically perfected by the ancient Greeks.
(F) Greek naturalism was eventually revived in renaissance Italy, with Michelangelo's *David* as the shining example.

UNIT
71

Mosaics

1 Mosaic is a fascinating art form that involves the piecing together of miniscule bits of colored materials—called tesserae from an ancient Greek word meaning stone slab or tile—to create an aesthetically pleasing image. The materials used to develop mosaics vary, but tile, glass, stones, and shells are the most common. The created image may be a depiction of something or someone, or it might form a pattern. Creating a mosaic can be a time-consuming process and attention to detail is of the essence, but the end result can be a breathtaking display of color with a texture not found in any other art form. This unique style has been utilized since ancient times, and remnants of ancient mosaics survive in Egypt, Greece, and what was once the Roman Empire.

2 Egyptians adorned their furniture and jewelry with tiny colorful stones or bits of glass. However, the Greeks escalated the idea to an entirely new level, and instead of decorating things subtly with the tiny elements, they created entire pieces. Early work was simplistic, using natural stones to create mosaics that were primarily black and white but had a slight hint of color embedded throughout. Later, as the art form continued to thrive, the artists became more precise with their materials. They cut tiny cubes from stone and added colored shards of glass. During the fourth century BCE, mosaics decorated the floors, walls, and ceilings in the homes of the wealthy.

3 Further developments in the mosaic were witnessed during the Roman Empire. Designs became more elaborate and featured numerous colors. Glass was used more and strategically placed at such angles as to maximize light reflection. The great villas of well-to-do people throughout the Roman Empire were adorned with impressive mosaics that were becoming more intricate and detailed. Depictions in the mosaics were copied from paintings and drawings, mainly celebrating Roman mythology. As such, they were not original works of art but were no less impressive. As the Roman Empire continued to expand, however, the art form lost its character and mosaics became rather dull. The rise of Christianity, though, would revitalize the mosaic as early Christians adorned their churches and basilicas with glorious mosaics depicting a variety of Christian symbolism. Mosaics could now truly be called works of art as a new style of mosaic emerged during the Byzantine Empire in the fifth century. A special glass was developed that contained air bubbles and had a rough surface which created a dramatic effect as light reflected and refracted within the glass. Gold was commonly featured and regal images of Jesus, the Virgin Mary, and other Christian figures abounded.

4 In stark contrast to the Eastern-style mosaics that were featured in Christianity, another style of mosaic was being developed independently in the Islamic world. This art form was brought to the Iberian Peninsula by the Moors, and stunning examples of it were discovered in Spain. Islam does not permit idol worship and never depicts the human form in art. A unique style of mosaic developed in the Islamic world and is the kind most commonly associated with mosaics today. Islamic mosaics, rather than featuring religious figures, instead feature amazing geometric patterns rich in color and detail. The designs are highly mathematical, and each half of the mosaic is a mirror image of the other, whether right and left or top and bottom. Tesserae are predominantly ceramic and are fit together by hand to ensure that there are no gaps and that the entire surface is covered.

5 After a decline in mosaic in medieval times, interest in the technique was renewed in the nineteenth century. Britain was experiencing increases in wealth during the Victorian era, and a taste for lavish things redeveloped. Mass-production meant that tiles could be produced cheaply, and so decorating floors of public buildings and homes became popular. Early in the twentieth century, the artists of the Art Nouveau movement reinvented the mosaic. A new technique required broken pieces of dishware or other discarded materials to create collages, and the results were impressive.

1. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) Mosaics take much time and effort but are unique and impressive for their color and texture.
(B) Making a mosaic is difficult as one must concentrate heavily and devote much time to the project.
(C) The art of mosaics is impressive for its array of color and use of texture.
(D) The use of texture in mosaics makes it arduous work as pieces must be hand painted and placed.

2. According to paragraph 3, which of the following events revitalized the art of mosaic after the expansion of the Roman Empire?

(A) The conquering of Rome by the Byzantines
(B) The rise of Christianity
(C) The rise of Islam
(D) The movement of the Moors to the Iberian Peninsula

3. What can be inferred from paragraph 3 about Byzantine mosaics?

(A) They were developed by priests.
(B) They were made of gold.
(C) They were copied from paintings.
(D) They were original pieces.

4. Why does the writer mention that Islam does not permit idol worship and never depicts the human form in art in paragraph 4?

(A) To contrast Islam with Christianity
(B) To show how geometric patterns can be religious in nature
(C) To explain why Islamic mosaics are different from Eastern mosaics
(D) To explain why Eastern mosaics were not popular in the Islamic world

5. Complete the table below to summarize the information about mosaics discussed in the passage. Match the appropriate statements to the type with which they are associated. Two of the statements will NOT be used.

Mosaics	Statements
Eastern	**Select 2** • •
Islamic	**Select 3** • • •

(A) Features religious imagery
(B) Forbids use of shells
(C) Uses geometric patterns
(D) Mainly uses ceramics
(E) Commonly uses glass
(F) Ancient Egyptians perfected style
(G) Brought to Spain and Portugal by the Moors

UNIT 72 The Development of Portraits

1 Portraits have long been a means for artists to express their affection for or admiration of a subject by capturing the image in paint. Indeed, the best portraits are considered to capture a person's essence, which requires not only tremendous talent but also amazing devotion and sincere insight on the part of the artist. Most portraits, however, are not labors of love but are commissioned by the subject or someone else on behalf of the subject. These are generally very wealthy or incredibly powerful people with a great deal of influence who wish to be forever immortalized on canvas. Similarly, portraits of heads of state are often displayed in government buildings. Dictators are known to strategically place portraits of themselves throughout the regions they rule. This is to assert their dominance and encourage adoration among their subjects. Portraits generally feature a single human subject but can also feature a group or even an animal. They may be full-bodied, half-length, or feature just the head and shoulders of a subject and can be sculpted, painted, or photographed. Some are highly stylized to emphasize the greatness of the subject, while others are noted for their likeness to the subject. The popularity of different types of portraits has, of course, changed with the times as values and as art appreciation have changed.

2 What is believed to be the earliest existing portrait was discovered in a cave in France and is thought to be approximately 27,000 years old. The image was created using calcium carbonate and used the wall of the cave to give contours to the face. The drawing is quite basic, but the features of a face are discernible. The remains of a human body were also found in the cave and dated to approximately the same time period, indicating that the portrait was meant to somehow immortalize the memory of the deceased. This is a practice that was also common in the ancient civilizations, of which we have a great deal of evidence. The Egyptians made sculptures of their most revered people and painted portraits of common people as well, the former being embellished to commemorate a heroic life, while the latter was kept realistic to capture as true a likeness as possible to the actual person. In Roman times, both great people and common people were portrayed in a realistic way. During the fourth century, however, this trend gave way to a preference for more glorified depictions. In the late Middle Ages, it again became popular to commission lifelike portraits in Europe.

3 The Renaissance, which began in the fifteenth century, marked a revitalization of the art world and portraits again became very popular. A renewed interest in antiquity was a feature of the Renaissance, and portrait medals akin to those typical of classical times reappeared. The profile was featured predominately in these ancient medals, so profile portraits became stylish. Perhaps one of the most famous portraits of all time, the *Mona Lisa*, was painted during this time by Leonardo da Vinci. Throughout the sixteenth century, portraits seemed to celebrate wealth over accomplishment. Artists were challenged with complex poses and the demand for detailed depictions of jewelry and other finery. The trend of depicting wealthy and important people in elegant attire continued into the seventeenth and eighteenth centuries as rococo and baroque came to be the dominant styles in the art world. Artists now became more experimental and bold with their techniques. Showing the subject in action, for example, became popular and added to the lifelike quality of the work.

4 The invention of the camera provided a fabulous new medium for portraits. While the rise of abstract art in the twentieth century marked a decline in interest in the portrait, this interest has been renewed in recent years, particularly among the middle class. Photographs are an affordable way to commemorate important events such as graduations and weddings. Many homes feature a family portrait, and while these are usually photographed, some are painted because the commissioner has an affinity for painted works. Painted portraits, however, are generally based on a photograph rather than having the subject sit for the artist for extended periods of time.

1. What can be inferred from paragraph 2 about the portrait found in the French cave?

(A) The artist was saddened by the death of the subject.
(B) The artist was very talented.
(C) The artist was commissioned by the family of the deceased.
(D) The artist was the best artist of his or her time.

2. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) Egyptians revered both common people and royalty and immortalized both in portraits.
(B) Egyptian ruins provide examples of ornate sculptures and true-to-life portraits of people.
(C) Egyptians made glorified sculptures of important people and realistic paintings of common people.
(D) Egyptians typically glorified important people by making sculptures and painting portraits of them.

3. Why does the writer mention the Mona Lisa in paragraph 3?

(A) To give an example of a famous portrait that features the subjects profile
(B) To show an example of a famous portrait typical of the Renaissance
(C) To illustrate how da Vinci revolutionized the art of portrait painting
(D) To explain how anonymity can add to the intrigue of a portrait

4. According to paragraph 4, what caused the decline in popularity of the portrait in the twentieth century?

(A) The invention of the camera
(B) The rise of the middle class
(C) The long waits for completion of portraits
(D) The development of abstract art

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

Portraits are an art form as old as art itself.

(A) Evidence from ancient civilizations show that portraits of great people were highly glorified while those of common people were realistic.
(B) Dictatorial leaders use portraits as a symbol of their domination, and when they are overthrown, their subjects tear them down.
(C) The increase in art appreciation and in interest in antiquity that characterized the Renaissance inspired a renewal in the practice of portrait painting.
(D) *Mona Lisa* was the most renowned artist of the Renaissance.
(E) More recent portraits tend to be taken with a camera rather than painted and are popular amongst the middle class.
(F) Most modern portraits are painted but are based on photographs rather than live subjects.

UNIT 73 Famous Composers

[1] As the simple world view of the Dark Ages began to blossom into the multi-faceted, free thought of the Renaissance, traditional medieval music also began to shift from single voices chanting to many voices accompanying one another in complex harmonies. The next logical step was to allow musical instruments to be used in serious artistic music, a move inspired by the realignment of power away from the central church. In post-Renaissance Europe, these trends would be explored and expounded upon by subsequent generations. The result is what is now called Western Classical music—the artistic European musical tradition, lasting roughly from the Renaissance to the early twentieth century.

[2] Though a proper review of this tradition would include dozens of great composers, a mere three can be singled out as a convenient reference point to tell the tale, three giants whose genius outshines the rest: Bach, Mozart and Beethoven. These three historically fall at the beginning, the middle, and the end of what is known as the Classical period, lasting roughly from 1730 to 1820.

[3] In the period leading up to this Classical period, called the Baroque period, composers such as Vivaldi, Buxtehude, and Händel had been hard at work developing the multi-melody styles known as counterpoint and fugue. Counterpoint involved two distinct melodies being played at once, often on a keyboard instrument or violins or produced vocally. The two melodies were related with respect to harmony; in other words, they were not in completely discordant keys. Fugue was a subtype of counterpoint in which different melodies entered the piece one by one.

[4] Johann Sebastian Bach is generally considered as having amalgamated all the advances made during the Baroque period into a single body of work. His work brought these to full fruition and set the stage for the Classical period. Bach's music uses influences from styles from all across Europe, which he changed and included in a coherent framework. Some of Bach's most famous works include the *Well-Tempered Clavier*, featuring a fugue in every possible key, and the unfinished *Art of Fugue*, considered the pinnacle of fugue mastery.

[5] How does one follow a complete mastery of melodic combinations? The answer for composers during the Classical period was to take things in a different direction. Classical musicians moved away from fugues in favor of a single melody draped over complex harmonies. This started the increased importance placed on musical chords—many notes played at once.

[6] The undisputed master of this new style was Wolfgang Amadeus Mozart. He wrote prolifically in every known style at the time, from symphony and opera to religious and dance music. He is even credited with the invention of the piano concerto. Some of his more famous works are his *Piano Concerto No. 24*, the opera *Don Giovanni*, *A Little Night Music*, and the *Turkish Rondo*. Toward the end of his career, Mozart even began experimenting with less traditional harmonies such as chromatic, a move that foreshadowed the twentieth century.

[7] If Bach began the Classical period, and Mozart typified it, then it is safe to say that Beethoven marked its finale and the change to the less orderly, more emotive Romantic period. This period can be viewed as the beginning of the breakdown of all of the rules that had been standard. It is characterized by the increased used of dissonance and avoidance of predictability. Beethoven also wrote in nearly every musical format, extending and further expanding their boundaries. He is highly regarded for the degree of expressivity in his music, often conveying emotions in complex and well-organized ways across long pieces. Some of his better-known works include his third symphony, *Eroica*, and his fifth and ninth symphonies. A piece from the latter, often referred to as the *Ode to Joy*, is now the official anthem of the European Union.

[8] These three masters are generally known as the greatest influences on most of the composers who succeeded them. Even today, well after the possibilities of this musical tradition are considered to have been exhausted, their music is still enjoyed and admired by many people all over the world.

1. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) The best manner to provide a summary is to cover the three greatest composers, the greatest geniuses of their day, Bach, Mozart, and Beethoven, since the others are numerous and insignificant.
(B) Even though scores of composers could be mentioned, just three are considered by far the greatest, Bach, Mozart, and Beethoven.
(C) Due to lack of reliable information on many other composers, people unfortunately must limit the discussion to the greatest three in musical history, who were by far the most brilliant: Bach, Mozart, and Beethoven.
(D) Since there is not room to mention all the great classical composers, content will include the three good friends who were known as the greatest geniuses of the age: Bach, Mozart, and Beethoven.

2. According to paragraph 3, what is the relationship between fugue and counterpoint?

(A) Fugue is identical to counterpoint.
(B) Fugue is the opposite of counterpoint.
(C) Fugue is a kind of counterpoint.
(D) Fugue is a predecessor to counterpoint.

3. Why does the writer ask how one follows a complete mastery of melodic combinations in paragraph 5?

(A) To introduce a mystery that musicians have been trying to solve for centuries
(B) To belittle a lofty notion that was elaborated in the two previous paragraphs
(C) To draw the reader's attention to the lack of intellectualism in music at this time
(D) To indicate the reason why musicians felt the need to shift away from complexity

4. What can be inferred from paragraph 6?

(A) Bach's works do not include any concertos for the piano.
(B) Mozart's popularity suffered due to his experimentation.
(C) Haydn was viewed by some as Mozart's closest competitor.
(D) Mozart's music was less popular among the upper classes.

5. Complete the table below to summarize the information about composers discussed in the passage. Match the appropriate statements to the one with which they are associated. Two of the statements will NOT be used.

Composers	Statements
Bach	**Select 2** • •
Mozart	**Select 2** • •
Beethoven	**Select 1** •

(A) Suffered from frequent fits of insanity, which gave his music a unique flavor
(B) Later works showed some similarities with twentieth-century developments
(C) Compositions including religious and dance music
(D) Considered to have written the masterpiece of combining melodies
(E) Composed around the time of the beginning of the Romantic period
(F) Took influences from styles all over Europe
(G) Often regarded as one of the greatest violinists in European history

UNIT 74

The Piano and the Violin

1 The two most influential instruments in the history of traditional European music are most likely the piano and the violin. Though they evolved in different ways and at separate times and ultimately served distinct purposes, their indispensability in the framework of the modern orchestra is undeniable. Even to this day, these two instruments still carry such heavy cultural overtones that many parents as far away as East Asia eagerly sign their children up for lessons. More cost-effective and practical instruments, such as the guitar, may have become more popular in the past half century. Nevertheless, the piano has retained such status that it can almost be considered household furniture.

2 The modern piano evolved from its distinctly primitive cousins, the harpsichord and the clavichord. These incredible instruments began to appear as early as the 1300s but differed from the modern piano in several ways. They were originally much smaller, contained thinner strings, and activated the strings differently. The clavichord used a thin piece of metal called a tangent. The harpsichord plucked the strings with quills. This imposed a crucial restriction; namely, that every note was always played at the same volume regardless of the amount of force used to press the keys. Despite this drastic limitation, keyboard instruments had already gained immense popularity in Europe. They were particularly useful in composition since they could easily combine notes in a variety of ways.

3 In the 1720s, an innovation was finally creatively devised to solve the volume problem. This solution came via expert harpsichord maker, Bartolomeo Cristifori, who was diligently working under the patronage of the famous Medici family in Italy. The arrangement of the hammers in Cristifori's new instrument enabled the performer to control the loudness of each note via the force of their fingers. Its logical name became *gravicémbalo col piano e forte* (harpsichord with soft and loud), later shortened to *pianoforte* and finally to *piano*.

4 The modern piano has undergone a multitude of changes from its primitive ancestors. The colors of the keys were reversed. Later, the number of keys was gradually expanded to the modern standard of 88. With the Industrial Revolution, the strings became thicker and heavier to enable greater volume and resonance. The pedals also were added one by one to increase control. Today there are three standard pedals. The damper on the right is pressed to sustain notes. The una chorda on the left decreases the volume. Finally, the sostenuto in the middle is pressed to sustain only those notes just played.

5 Whereas the piano quickly became the standard instrument for composition, the star performance instrument was the violin. Like the piano, the violin evolved via improvements on similar medieval instruments. These include the *rebec*, a three-stringed instrument ultimately of Persian descent, the popular Renaissance fiddle, and the five-stringed *lira de braccio*, often used when reciting poetry. The words viola, vielle, and Germanic fiddle, all derived from the Latin *vitula*, were used for all kinds of handheld stringed instruments. The word violin itself is merely a diminutive from the Italian viola.

6 Though instruments of this kind were widely popular in Europe, the earliest four-stringed versions of renown were produced by Andrea Amati in the 1550s. King Charles IX of France was so impressed that he commissioned two dozen of them to be constructed for him, one of which is the world's oldest violin. Violin making in itself became a kind of art, peaking in a golden age in the seventeenth and eighteenth centuries. Violins constructed by the most famous families of violin makers or luthiers, such as Stradivari and Guarneri, are still emulated and highly sought after to this day.

7 The standard violin had strings created from sheep guts and a bow comprised of horse hair. They quickly became the central instruments in orchestral compositions thanks to their rich, powerful tones. Orchestras typically feature two sections of violinists, one to play melodies and the other to supply background harmonies or melodies at lower octaves.

8 Even though the violin and piano may now play second fiddle to the electric guitar and the drum set, they are still vital components in contemporary music. Electric and digital pianos are not uncommon in rock groups; many pop groups with country or Celtic influences still feature the violin.

1. Why does the writer mention the methods used by the clavichord and harpsichord to strike strings in paragraph 2?

(A) To propose a link between these methods and violins discussed later in the passage
(B) To suggest a reason as to why their popularity had grown to such proportions
(C) To emphasize the elegance and utility of these underappreciated instruments
(D) To contrast them with the innovations made to produce the modern piano

2. What can be inferred from paragraph 4 about the piano's history?

(A) The original pianoforte was built with only a single pedal.
(B) A harpsichord had large black keys with smaller white ones.
(C) Today, the middle pedal is used more frequently than the others.
(D) The earliest pianos were made entirely of hardwoods and leather.

3. According to the passage, which instrument was NOT a predecessor to the violin?

(A) Minstrel's lute
(B) *Lira da braccio*
(C) Renaissance fiddle
(D) *Rebec*

4. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) The oldest violin in the world was originally designed specifically for King Charles IX of France, an expert violinist, who ordered as many as two dozen of them at once.
(B) The first violins were constructed by a committee of experts working for the pleasant King Charles IX of France; these 24 violins are now the oldest in the world.
(C) The French King, Charles IX, regarded these very highly and decided to ask Amati to build 24, one of which is now the oldest violin in the world.
(D) The violin was conceived by the French King, Charles IX, who instructed his underlings to build two dozen to perfection, one of which still survives to this day.

5. Complete the table below to summarize the information about the piano and violin discussed in the passage. Match the appropriate statements to the one with which they are associated. Two of the statements will NOT be used.

Instruments	Statements
Piano	**Select 3** • • •
Violin	**Select 2** • •

(A) Originally developed from an innovation in volume control
(B) Prized as a performance instrument for its powerful and rich tone
(C) More and more notes were added during its development
(C) Often used to compose music because it can combine many notes
(D) Still the most popular musical instrument for music groups today
(E) Best ones built by families in the seventeenth and eighteenth centuries
(F) First used by J.S. Bach to express emotive elements in his concertos

UNIT 75

The Orchestra

1 The ancient Greeks called the semi-circular area where dancers of the chorus would perform during plays the *orkhestra* or dancing place. This word has been handed down through a long line of cultures and with several meanings; in modern time, it is a large group of classical musicians typically led by a conductor and supported by a municipal government, with the modernized spelling *orchestra*. In ancient Rome, the term was used to refer to the place in the theater reserved for the senators and other high-ranking officials, something akin to our modern V.I.P. (Very Important Person) section. Its contemporary use can be traced back to around 1720, but the story of how the modern orchestra evolved follows a different thread.

2 During the early Renaissance in Italy, around the fifteenth century, it was becoming fashionable among the nobility to keep musicians around their homes to provide musical accompaniment for entertainment and official court ceremonies. A major shift came in the early seventeenth century with the popularization of the opera in Italy. This new genre of entertainment quickly spread to other parts of Europe. An integral component of the opera was a group of musicians playing together to accompany the singers. This began to establish small groups of musicians supported by aristocratic patronage.

3 The concept gained momentum in the early eighteenth century. During this time, eminent composers, such as Bach, would often be in charge of all of the musicians in their city. Around this same time, it became stylish among the elite class to build lavish homes in the country away from the towns and cities. Such country estates would hire and maintain permanent groups of musicians, enhancing overall quality as they played together for long periods of time. During this time, orchestras did not yet have conductors, this role often being fulfilled by the harpsichord player.

4 During the rise of classical-style music, improved techniques began to be developed and disseminated throughout Europe. These efforts were modeled after the state-of-the-art orchestra in Manheim, Germany. Around the turn of the nineteenth century, the music world witnessed the rise of municipal orchestras. The first one was organized by a merchant's association in Leipzig, Germany in 1781, followed by others in England and Europe. Later this century, composers and musicians instigated a shift away from operatic music and toward pure instrumental music. Much of the structure of the modern orchestra solidified at this time, in part due to standards set in Beethoven's works.

5 A large number of Beethoven's works called for many of the same instruments. These became the standard core of the symphony orchestra with many expansions as future alternatives. This core includes four sections: woodwinds, brass, percussion, and strings. Each section has a leader, or principal, who plays the solo parts and leads the others. The principal of the string section, the lead violinist, is also the principal of the entire orchestra, second only to the conductor. The woodwinds are usually led by the principal oboe player and the brass by the principal horn player. The principal of the percussion section is usually the timpanist.

6 This era also featured great improvements in the manufacturing and standardization of the instruments. One major advance was the invention of valved brass instruments. Such innovations became universal in a matter of decades. This, coupled with the increasing size of orchestras, enabled increasingly grandiose pieces that would have been impossible in previous decades. Some examples could be *La Symphonie Fantastique* (The Fantastic Symphony) by Hector Berlioz or *Ein Heldenleben* (A Hero's Life) by Richard Strauss.

7 Today, most major cities have municipal orchestras, prefixed with the equivalent terms symphony or philharmonic. These have been undergoing a kind of popularity crisis for quite some time. The resulting lack of revenue makes it difficult to justify funding for the facilities and musicians. Some critics maintain that today's orchestras have lost touch with the tastes of the general public. It is unclear for the future whether the orchestra will make the major adjustments to composition and image needed to adapt to contemporary musical tastes, or whether they will eventually be phased out in favor of more popular and practical endeavors.

1. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.
   - (A) Italian music during the early Renaissance was mainly funded by the upper classes; the peasants generally viewed musicians with suspicion.
   - (B) In the beginning of the Renaissance, playing music was becoming especially popular for Italian nobles, for both entertainment and diplomacy.
   - (C) In the 1600s in Italy, members of the upper class would often have musicians on hand to play during official and festive occasions.
   - (D) Many musicians began to find employment at Italian courts in the fifteenth century, where they would play odes to love and sacrifice.

2. Why does the writer mention lavish country homes in paragraph 3?
   - (A) To demonstrate the hypocrisy of the wealthier classes during troubled times
   - (B) To inform the reader of an initial cause for larger long-standing orchestras
   - (C) To argue that musicians of that time period often compromised their principles
   - (D) To cast doubt on the idea that orchestras developed only in the largest cities

3. According to paragraph 5, what is NOT a major section of a modern orchestra?
   - (A) Woodwinds
   - (B) Percussion
   - (C) Symphonics
   - (D) Brass

4. What can be inferred from paragraph 6 about orchestras?
   - (A) The increase in orchestral size was due in part to rising populations.
   - (B) The industrial revolution was making instruments more affordable.
   - (C) The new valved instruments enabled a single horn to play for two.
   - (D) Berlioz and Strauss both composed for extremely large orchestras.

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

   An orchestra originally referred to Greek dance floors, but today they are known as large musical ensembles which developed out of the classical European tradition.

   - (A) In the first orchestras, the harpsichordist played the role of the conductor.
   - (B) Early orchestras were supported by aristocrats and rose to popularity due to opera.
   - (C) New instruments and Beethoven's work helped standardize orchestras with a composer and four sections with distinct leaders.
   - (D) The first municipal orchestra was created in Leipzig, Germany in 1781 by a group of merchants, with others following in America and Europe.
   - (E) Some of the most ambitious symphonies ever composed, made possible thanks to recent inventions, were written by Hector Berlioz and Richard Strauss.
   - (F) Though most cities currently have municipal orchestras, their future is uncertain as their popularity has been waning for many years.

UNIT 76

Jazz

1 Jazz, throughout its brief yet diverse history, has been a term that is notoriously difficult to define. Etymologists cannot agree on its precise origins, music theorists cannot agree on a set of necessary and sufficient conditions, and jazz performers themselves are typically reluctant to say what jazz is and is not. When an early jazz great, Louis Armstrong, was asked what jazz is, he replied, "If you have to ask, you'll never know." In spite, or perhaps because of all of this uncertainty, the American Dialect Society gave the word jazz the distinguished title of "Word of the Twentieth Century."

2 Jazz music itself seems to have had almost as many influences as it has spawned subgenres and offshoots. The ultimate source is typically traced back to a blending of western European and West African musical traditions. This took place in the southeastern United States around the turn of the twentieth century. Elements of West African music, such as highly emotive vocals and leads, strong rhythms, and call-and-response, were superimposed onto traditional European musical structures and instruments.

3 Jazz is said to have grown out of two pre-existing Afro-European genres: blues and ragtime. Blues took American country/folk and added an extra "blue" note along with modifications to the rhythm and singing style. Ragtime, often heard over old silent movies, mixed classical and folk piano styles with adapted rhythms.

4 A crucial early aspect of jazz—indeed, the aspect that many point to as the defining feature of jazz—is improvisation. This involves the musician freely playing novel notes, notes that were not written in advance by a composer. The format of the improvisation and the degree of freedom of the performer vary depending on the type of jazz. This feature marks a stark contrast with pre-twentieth century European music, in which the performer was largely subservient to the composer.

5 Sometime around the 1910s, New Orleans marching bands and other musicians began adding aspects of blues to their music. The result was dubbed Dixieland, now known as New Orleans Jazz. An exodus of African American musicians from the south's new segregation laws spread jazz to the north. This induced other jazzes, like Chicago jazz, a mixture of big band and Dixieland, and hot ragtime, a New York innovation with heavier rhythms.

6 The 1920s ushered in the speakeasy, the radio, and the phonograph, all of which propagated jazz's popularity. This era saw the rise of a jazz trumpeter, Louis Armstrong, who would later invent scat, or improvisational singing. This influenced scores of future talents, such as Ella Fitzgerald, Frank Sinatra, Dizzy Gillespie, and Billie Holiday.

7 The 1930s was an era of big swing bands, in which popular dance orchestras would play jazz and jazz-like music under famed conductors such as Duke Ellington. At this same time, jazz had achieved some popularity in Europe, particularly France, where a new European genre of jazz was developing. Gypsy jazz, as it was called, was pioneered by a Belgian guitarist, Django Reinhardt and incorporated elements of French dance hall music and even featured multiple nylon-string guitars. The 1930s was also a mini-golden age for Kansas City jazz, which began developing into the bebop of the 1940s.

8 Bebop is considered by some as the apex of jazz. Its aim was to bring jazz out of the realm of pop and dance and make it musicians' music. Its key features were a faster tempo and an entirely innovative level of improv, encompassing not just melodies but chords as well. Some of the best known jazz musicians, such as Charlie Parker, Dizzy Gillespie, and Miles Davis, were renowned bebop artists.

9 In the 1950s, the pop threads of jazz lead to rock n' roll, whereas the serious threads of jazz, such as avant-garde and free jazz, incorporated increasingly deeper levels of improv. After this point, jazz seemed to be everything at once, giving rise to a variety of hybrids. These include cool jazz, taking from bop and swing; hard bop, mixing bebop with blues and gospel; Latin jazz with Latin rhythms; jazz fusion, borrowing elements of rock; and just about anything else imaginable. Today, jazz still seems just as hard to define, morphing into everything from smooth jazz, a kind of background music, to nu jazz, attempting to fuse with electronica.

1. What can be inferred from paragraph 3 about blues and ragtime?
   (A) Ragtime was mostly developed by classically-trained piano musicians.
   (B) Blues music actually contributed more elements to jazz than ragtime did.
   (C) Ragtime first became popular in major cities as a supplement to movies.
   (D) Both blues and ragtime were mixes of European and African traditions.

2. Why does the writer mention improvisation in paragraph 4?
   (A) To argue that jazz is actually distinctly different from traditional music
   (B) To demonstrate that attempts to define jazz via a characteristic have failed
   (C) To explain a concept that is repeatedly referred to in the rest of the passage
   (D) To introduce a controversial issue that would not be resolved for several years

3. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.
   (A) In the 1950s, rock n' roll musicians borrowed jazz elements, while serious musicians left other genres to create avant-garde and free jazz with more improvisation.
   (B) The 1950s saw a disunity in the jazz community with avant-garde, which used more improvisation, claiming to be serious music and asserting that rock n' roll was pop.
   (C) After 1950, there remained only two kinds of jazz: rock n' roll, which was pop, and avant-garde and free jazz, which used greater amounts of improvisation.
   (D) Rock n' roll arose from the pop threads of jazz in the 1950s, while avant-garde and free jazz became more serious with improvisation.

4. According to the passage, which of the following is NOT a type of jazz?
   (A) Hard bop
   (B) Deep jazz
   (C) Gypsy jazz
   (D) Dixieland

5. Complete the table below to summarize the information about the eras of jazz discussed in the passage. Match the appropriate statements to the one with which they are associated. Two of the statements will NOT be used.

Eras	Statements
Prior to 1940	**Select 3** • • •
1940s and 1950s	**Select 2** • •

   (A) Popularity of a cappella jazz expands performances to more venues.
   (B) Musicians like Charlie Parker and Dizzy Gillespie pioneer bebop.
   (C) Dixieland music mixes marching band styles with blues.
   (D) Rock n' roll is born from jazz, as is more serious avant-garde.
   (E) Harsh jazz develops from Mississippi blues and free form genres.
   (F) Gypsy jazz is developed in Europe by adding elements of French music.
   (G) Louis Armstrong develops scat, which later influenced many famous singers.

UNIT 77

On the Stage

1 People are citizens of a culture highly fixated on the performing arts. Numerous people experience intense feelings of affinity with their favorite actors and develop an extremely high level of interest in the actors' personal lives. This interesting phenomenon has reached such magnitude in society that practically all news agencies, including ones considered to be serious news leaders, devote significant percentages of their time to informing the public of trivial and intrusive aspects of popular actors' lives. In spite of this intense and highly curious relationship between society and the performing arts, people remain quite removed from the theater itself, the medium of film having long ago superseded this venerable art form as the undisputed king of public entertainment. Thus, counter-intuitively, as an interest in performing arts has magnified along with the rise of motion pictures, the art of performance itself, the theater has only survived in remnants of its former glory.

2 Though theatre in the broadest sense has probably existed at least as long as language, the western theatrical tradition can be traced to a solitary religious cult in ancient Greece. Among the Greek pantheon of gods was Dionysus, god of wine, music, and liberation. His loyal followers would honor him at festivals with ritualized chanting. Eventually, the chorus leader of chanters began to develop a character of his own. Later developments expanded to three characters who acted out stories with the chorus still chanting in the background.

3 This laid the foundation from which all of western theater advanced. The Middle Ages continued the tradition in the form of religious plays depicting scenes from the Bible. Morality plays, in which each character personified a virtue or vice, also gained popularity. Modern theater exploded onto the scene in the Renaissance with innovators like English playwright William Shakespeare, French dramatist Molière; and the rise of Italian opera. These were succeeded by a multitude of developments and genres, until the rise of the motion picture enabled a single performance to entertain millions of people in different places and at different times.

4 The modern theater has survived by adapting to what niches in the market have not been consumed by film. The main genre, in terms of volume and revenue, would have to be large-production musicals. These offer the audience live spectacles and virtuoso song and dance numbers, two tools that enable theatre to have a slight edge over film. In New York City or London, for example, audiences pay as much as 250 dollars per seat to see their favorite musicals.

5 Another genre that fills a distinct niche would be plays that incorporate audience interaction. Such specialized performances often request volunteers to come onstage and participate in various aspects of the play. Improvisational theater has also sustained itself as an established and healthy modern subgenre. Naturally, people cannot go to a film and expect the actors to create a new line or joke each time. Many major cities have one or more comedy troupes specializing in improvisational comedy, typically taking suggestions from the audience in order to construct a premise for short skits.

6 Street theater festivals also exhibit promise for the future. These usually take place throughout an entire city over several days, in which patrons are free to stroll about and absorb the festive atmosphere. If people begin watching a performance that they find they do not particularly care for, they are free to move on to the next one. This eliminates one of film's advantages: it is not rude to get up and walk out of a movie that is not enjoyable. This would be quite rude in a traditional play, but in street theater, all members of the audience are passers-by. Street theater festivals are currently gaining in popularity all around Europe.

7 The future of theater is far from certain. Although it has proven its staying power in a few specific modernized forms, the days of the local playhouse seem to be forever eclipsed by the local movie theater. Indeed, the inspired and aspiring young playwrights, actors, and producers of the past are the aspiring young filmmakers of today. No one can say whether the next wave of technological advances will not leave film out to dry in favor of a return to theater.

1. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) Paradoxically, live performance has become much less popular even while performances in general have become hugely popular in the form of movies.
(B) Therefore, no one predicted that the motion picture, while increasing public interest, would actually damage the theater.
(C) So, contrary to what one would expect, the theater itself is actually stronger than ever, despite the rampant popularity of film.
(D) This means that the rise of film as a genre in its own right was unable to anticipate the detrimental effects that theater would have on it.

2. Why does the writer mention the Greek god Dionysus in paragraph 2?

(A) To emphasize the reliance of early playwrights on religion for inspiration
(B) To contrast this tradition with that of the morality plays of the Middle Ages
(C) To provide the reader with a sense of the spirit of a theatrical performance
(D) To describe the religious group whose celebrations evolved into the theater

3. What can be inferred from paragraph 5 about audience participation theater?

(A) Modern audiences are drawn to the idea of being incorporated into a play.
(B) Most improvisational comedy troupes deal with current controversial topics.
(C) Actors in many modern theater genres must be in very good physical shape.
(D) Audience interaction theatres typically cannot afford to pay their actors.

4. According to paragraph 6, what is true of street theatre festivals?

(A) They usually last for weeks at a time.
(B) They are becoming popular in Europe.
(C) They are only held in July and August.
(D) They typically perform comedy skits.

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

Theater, while the main form of entertainment for ages, has only survived the rise of film in special adapted forms.

(A) Society has developed an unhealthy fixation with the private lives of film actors, which is even encouraged by serious media.
(B) Ancient Greek theaters evolved from religious cults and involved a chorus that chanted and leaders who acted.
(C) Theater arose in ancient Greek cults and developed into many genres after the Renaissance.
(D) Modern theater has survived by offering experiences that film cannot, such as live spectacle, audience participation, and improvisation.
(E) Many major cities now have one or even several improvisational comedy groups which perform in large venues.
(F) Theater has survived in a few forms, and though film seems unassailable at this time, it cannot be said what will happen in the future.

UNIT 78

Isadora Duncan

1 During the nineteenth century, a trend began in many intellectual pursuits, such as art, music and philosophy, in which the rules and structures established in the previous centuries began to be bent and broken down, a process that would climax in the twentieth century with movements like Dada, Atonalism, and Existentialism. For whatever reason, this process was not so gradual in the field of dance, the rigidity of ballet being suddenly confronted in the late nineteenth century and a whole new unbounded genre being formed within the span of a generation. This new genre, characterized by free expression and interpretation, is now known as modern dance, and its iconoclast was American dancer Isadora Duncan.

2 Isadora Duncan was born in San Francisco, California in the late 1870's into a somewhat unusual family situation. Her father was a polygamist, who left his four-child family to marry Isadora's mother. He had four children with Isadora's mother, only to leave this new family shortly thereafter to marry another woman. According to some accounts, this led Isadora's mother to apostasy and resulted in Isadora being raised as a strict atheist. Her mother educated her in music, theater, and literature, including Shakespeare, and emphasized the power of free-thought. Later, dancing lessons were prioritized to the detriment of Isadora's formal education.

3 As young as the age of six, Isadora was dancing professionally and teaching other children to dance. In 1895, when Isadora was around sixteen, her blossoming career prompted her family to move to New York, where she danced in a production of Shakespeare's *A Midsummer Night's Dream*. For three years, she enjoyed financial support from New York high society and gave many private performances. After this time, her mother took the family to London on a cattle boat, where Isadora gave performances and eventually joined a touring dance troupe. After touring Germany and Eastern Europe, she studied for a year in Greece and gave a special performance outside of Athens.

4 Over the course of her career, she developed her unique style. This was partly inspired by intellectuals such as Friedrich Nietzsche and Walt Whitman. Her viewpoint held that ballet was ugly and rigid and that the dance of the future would be free and inspired. She herself took much inspiration from antiquity, typically wearing a Greek-style tunic, flowing scarves, and sporting bare feet in her performances. She preferred to dance to Romantic period music, such as Strauss, Tchaikovsky, and Wagner. Audiences were captivated by her passion, and she was hailed in Europe as the greatest dancer of her time.

5 Isadora had two children, one by a famous theater designer and another by a millionaire. Tragically, both her children drowned in Paris in 1913 when the car they were traveling in accidentally rolled into the Seine River. Shortly thereafter, her alleged bisexuality and relationships with other prominent females began to fuel the air of speculation and controversy surrounding her eccentric persona.

6 Late in her career, around 1920, she accepted an invitation to open a dance school in Moscow in the newly formed Soviet Union. During this time, she was briefly married to a Russian poet, whom she left due to his mental problems and violent episodes. After two years, she became displeased with the conditions in Moscow and left to go on an American tour. Unfortunately, she never achieved her European level of popularity in the United States, perhaps owing in part to her outspoken sympathies for communism.

7 Later in life, her career slowed down, and she had difficulty adapting to a normal life. She borrowed money from friends and ran up debts at hotels in Mediterranean resorts and in Paris. One of the best known episodes from her life is the bizarre story of her death. A friend was picking her up in a sports car in Paris in 1927. She called back to her friends on the street, "Good-bye my friends, I'm off to glory!" and then got in the car. As the car drove off, one of her long scarves got tangled in the wheel. By the time the driver realized what had happen, Isadora's neck was already broken.

1. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) For some reason, ballet was too structured for this process to occur, and it was only a very special group at a single time that succeeded where many others had failed in the past.
(B) Though it is not known why, dance did not follow this pattern. Instead, the rules of ballet were broken down all at once and the new paradigm was created in a very short time.
(C) Due to an unknown cause, this was not the case for dance, in which a single committee had to formally draw up a declaration ending the years of fixed structure and inflexibility in a single stroke.
(D) For a plurality of specific reasons, a single generation was able to accomplish this in dance, breaking down the constructive framework of ballet, whereas it had taken around a century in other fields.

2. Why does the author mention Isadora's unusual family background and upbringing in paragraph 2?

(A) To expose a link between certain family situations and aspects of adult life
(B) To reassert a claim made in the previous paragraph regarding her greatness
(C) To provide insight into the development of her unconventional personality
(D) To relate an entertaining anecdote that contrasts with subsequent monotony

3. According to the passage, what is true of Isadora's performance?

(A) She performed in large groups.
(B) She preferred to wear Greek attire.
(C) She dazzled audiences with her strength.
(D) She sculpted her hair into abstract shapes.

4. What can be inferred from paragraph 5?

(A) Her two children were half-siblings.
(B) Her chauffeur was tried and jailed.
(C) She blamed her lifestyle for the tragedy.
(D) She suffered from nervous breakdowns.

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

Isadora Duncan led an intriguing life and played a primary role in liberating the field of dance and developing what is known as modern dance.

(A) Her father had several different wives and families in quick succession, leaving her family when she was still quite young.
(B) Raised in an unconventional setting, her dancing was praised for its passion, taking her around the world.
(C) Her first major performance was in a version of a Shakespeare play in New York City when she was a teenager.
(D) She underwent tragedy and controversy, her projects and popularity later losing momentum.
(E) Her only marriage, to a Russian poet, was short-lived and fraught with violent outbursts.
(F) In her last years she sank into debt, eerily ending in her bizarre death caused by one of her signature long and flowing scarves.

UNIT 79

The Story of the Camera

1 From ancient times, it has been known that a beam of light entering a dark tent from a single, small hole would make an upside-down image of the exterior on the wall of the tent. A curious and noteworthy phenomenon, but little did these ancients know that this idea would one day be utilized to make and keep exact copies of the images. The devices would be called cameras, from the Latin *camera obscura*, meaning dark room. The invention would spark the desire to keep these images for memories' sake.

2 The phrase *camera obscura* itself, however, was likely a rendering of a similar Arabic phrase, *al-bayt al-mudhlim*, or dark house, coined by eleventh-century thinker Ibn al-Haytham. This dark house was a kind of miniature camera obscura he invented to study light. The idea reappears in drawings and descriptions from Leonardo Da Vinci in his *Codex Atlanticus* in the fifteenth century. Around this time, European artists were using camera obscuras to produce images which they would then trace in order create a realistic-looking pictures.

3 In 1685, a full century and a half before advances in chemistry made photography possible, a portable camera obscura was built by the German monk Johann Zahn. Another important advance came in 1724, when Johann Heinrich Schultz noted that a combination of silver and chalk would get darker when exposed to light. However, 100 years would pass before the history of modern photography could truly be said to have begun.

4 In 1826, French inventor, Nicéphore Niépce, used an combination of pewter and petroleum to make the first photograph in the history of the world. Far from impressive, it appears only as a blurred, shadowy outline of a building. The photograph took eight hours to take in full bright sunshine. In 1833, Niépce died, leaving his notes on improvements to Schultz's silver and chalk process to a colleague, Louis Daguerre. Daguerre made major enhancements to the process and took a modern looking black-and-white photograph of Boulevard du Temple in Paris around 1893. It took a full 10 minutes of exposure to take. Nevertheless, it features the first photographic image of a person: a gentleman who was stationary because he was having his boots polished.

5 This new process was called the daguerreotype and was still used in some form through the twentieth century in the famous Polaroid cameras. The next great step forward came in 1840, when Englishman William Fox Talbot invented a new process which involved a negative, or reverse-color, image being recorded, so that multiple positive images could be produced subsequently. This technique would become the basis of all film cameras in the next century. After these early advances, a market began to develop for affordable family portraits. This became a driving force behind future strides in photography and camera technology.

6 The democratization of photography took a giant leap forward in 1885 when American inventor, George Eastman, began manufacturing film, which would become the most popular way to take pictures for the next 100 years. In 1888, Eastman came out with his first Kodak camera with a simple design and unprecedented low price. It came with a large amount of film in it, enough to take 100 photographs, but had to be sent back to the factory for developing and reloading. This business model truly brought photography to everyone—all a person had to be able to do was point and click.

7 Traditional plate cameras continued to offer higher quality than film until the appearance of 35 millimeter (mm) film in 1925 in a camera called the Leica I. It was very popular, and 35mm subsumed the high-quality end of the market within 10 years. In 1947, U.S. scientist, Edward Land, introduced his ever-popular Polaroid instant camera. This meant that people no longer had to wait for their film to be developed, though with some compromise in quality.

8 The first digital camera was introduced on the U.S. market in 1991 at a whopping price of 13,000 dollars. Following general technological trends, this price quickly dropped, and around 10 years later, the digital camera began conquering the consumer market. Today, most cellular phones now come with digital cameras.

1. According to paragraph 2, what was the camera obscura used for before photography?

(A) It produced images which were traced by artists.
(B) It produced entertainment.
(C) It performed religious acts.
(C) It dried and stored grains.

2. Why does the writer mention Zahn and Schultz in paragraph 3?

(A) To honor two thinkers who predicted the development of digital cameras
(B) To illustrate the shift in photography from Germany to France around 1800
(C) To deny the claims that Niépce should be considered the father of photography
(C) To report the crucial advances that were made long before the first photograph

3. What can be inferred from paragraph 4 about photography?

(A) Nicéphore Niécpe traveled to several continents to collect photographic materials.
(B) Other people did not appear in Daguerre's photo because they were moving.
(C) Schultz had left many of his personal notes to ancestors of Nicéphore Niépce.
(D) Cameras were not purchased much in the 1830s because of the exposure time.

4. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.

(A) The year 1840 witnessed another major advance because William Fox Talbot of England invented the negative, where white is back and black is white, which meant people could later make many normal pictures from it.
(B) The invention of the negative in 1840 by William Fox Talbot in England meant that multiple correct images could now be produced that were right-side-up after a single picture was taken.
(C) The first true photograph was taken in 1840 by Englishman William Fox Talbot when he produced a picture with the colors reversed; this negative was a great artistic achievement and was lauded across the art world.
(D) In 1840, William Fox Talbot mathematically formulated a new procedure in England which enabled him to make as many copies as desired of a single photographic image. The only drawback was that the colors were reversed.

5. Complete the table below to summarize the information about the development of the camera discussed in the passage. Match the appropriate statements to the time period with which they are associated. Two of the statements will NOT be used.

Time Periods	Statements
Before the1830s	**Select 2** • •
1830 to 1900	**Select 3** • • •

(A) The daguerreotype photographic process was developed.
(B) Demand for cheaper family portraits helped drive photography market.
(C) The first portable camera obscura was invented in Germany.
(D) Experimentation with first multi-lens cameras took place in Europe.
(E) Drawings and descriptions of devices were used for producing images.
(F) Eastman managed invention and production of the first film cameras.
(G) Advances in high-emulsion transposition allowed for enhanced image quality.

UNIT
80

Cinematography

The explosion of film as a form of art and entertainment has had an almost immeasurable impact on the world, having overtaken all other art forms with the arguable exception of music and even becoming one of the most lucrative global businesses. This uniquely modern form of expression involves a team of artistic talents working together, from the script writer to the actors, directors, and set designers. However, one of the most crucial roles in the process and one of the least understood by the general populace, would have to be the cinematographer, who is responsible for all of the technical aspects that determine how the film ends up looking on opening night.

In the earliest days of film, the director would often fulfill the role of camera operator and cinematographer as well. As technical advances and growth of the industry gradually amplified the complexity of these roles, there arose a need for a person to mastermind all aspects of the film, camera, and lighting. Thus, the role of the cinematographer was born, and by 1919, the American Society of Cinematographers was established in Hollywood. Today, the cinematographer is often referred to as the Director of Photography, or DP, and is in charge of the camera, grips, and lighting crew.

The cinematographer's role is complex, demanding manipulation of a myriad of technical variables. Film stocks range from eight millimeters up to 65 millimeters, with 16 and 35 being most common. Higher stocks provide greater detail at higher costs. A number of other factors surrounding the film, such as speed, color saturation, and contrast have a major effect on the final product. Today, digital video cameras have settings that mimic their analog counterparts.

The lens of the camera itself requires a number of motivated choices. A wide-angle lens will exaggerate distances, while a telephoto lens will minimize them. The cinematographer can also modify the aperture size and focal distance of the lens to adjust the depth of field—the amount of foreground and background that is in focus. Special filters can also be added to the lens for novel effects. Diffusion filters make an image softer, or less distinct. Color filters can tint the film different colors.

The movement of the camera itself is naturally a major consideration as well. Cameras can pan (move side-to-side), tilt (rotate vertically), dolly (shift horizontally), and crane (move vertically). In the 1970s, a new invention called Steadicam, consisting of a body harness and a stabilizer arm, enabled the camera operator to move freely while isolating the camera from the motion of the body. Today, a variety of designs and systems for camera stabilization populate the market.

Interesting effects can be produced by tweaking the number of frames of film that are taken per second, known as the frame-rate selection. Normal motion is set to standard values for different purposes, such as 24 frames per second for movies and 30 frames per second for U.S. television. Increasing the number of frames per second will result in slow motion. Decreasing them can be used to achieve a time-lapse effect, such as showing a flower grow from the soil in a mere 30 seconds.

Lighting is considered by some to be the most critical aspect of the cinematographer's job, due to its ability is change the look and feel of a scene. One important distinction is between key light and fill light. Key light is the light that illuminates the subject such as the main actor in the scene and determines the angle of illumination. The fill light is used to smooth out the key light and fill in shadowy areas. The key-fill ratio can be adjusted for different purposes. For instance, a key-fill ratio of two-to-one might be appropriate for a bright, cheery children's program. On the other hand, a key-fill ratio of eight-to-one might be better suited for a horror movie.

Special effects have increased exponentially in importance over the years. Today, special effects are increasingly being added in post-production using digital modification and computer animation. The industry can only expect this aspect of cinematography to become more vital in the future.

1. According to paragraph 2, who originally fulfilled the role of cinematographer?
- (A) Actor
- (B) Script writer
- (C) Producer
- (D) Director

2. What can be inferred from paragraph 3 about cinematography?
- (A) Contemporary cinema uses mostly 65 millimeter film.
- (B) Digital video cameras are superior to the older, analog cameras.
- (C) Eight-millimeter film is the cheapest of the film stocks mentioned.
- (D) Speed and color saturation are adjusted with automated programs.

3. Which of the following best expresses the essential information in the highlighted sentence? *Incorrect* choices change the meaning in important ways or leave out essential information.
- (A) The new Steadicam system came out in the 1970s, harnessed the strength of the camera operator's body, and stabilized the arm so that the body's motion could not influence the camera.
- (B) Starting from the 1970s, camera operators began developing modifications to reduce the effects of their motion on the camera, finally resulting in the Steadicam, made of a body harness and stabilizer arm.
- (C) Camera operators have been able to move freely without this affecting the camera since the 1970s thanks to the invention of a system with a body harness and stabilizer arm called Steadicam.
- (D) The new Steadicam policies first introduced in the 1970s lifted the restrictions on the movement of the camera operator with respect to the camera, the body harness, and the stabilizer arm.

4. Why does the writer mention children's programs in paragraph 7?
- (A) To provide an example of when a cinematographer would use a lighting effect
- (B) To illustrate the range of genres that a cinematographer must be able to deal with
- (C) To introduce the idea of ethical considerations in the decision-making process
- (D) To insert crucial background information on the development of lighting layouts

5. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not in the passage or are minor ideas in the passage.

The rise of cinema as an industry quickly created the role of the cinematographer to handle a large number of technical aspects.
- (A) The American Society of Cinematographers was first established in Hollywood in the year 1919.
- (B) The cinematographer must decide the film's size and many other related variables, including lenses, filters, and camera movement.
- (C) A wide-angle lens is often used to increase the perception of distance, while a telephoto lens is used to decrease the perception of distance.
- (D) The number of frames taken per second can be used to film a scene in slow motion, or to capture a slow process at high speed.
- (E) Key lighting is used to cast light on the main actor in the scene, while fill lighting is used to supplement it and remove excessive shadows.
- (F) Lighting is often considered the most important factor, but computerized special effects will increase in importance in the future.